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THE RESULTS OF OPHTHALMIC OPERATIONS

The Middlemore Lecture, delivered at the Birmingham Eye Hospital on December 2, 1930

BY

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RICHARD MIDDLEMORE founded this lecture with intent that it should be of service to the general practitioner, rather than a scientific discourse upon some severely scientific subject.

The results of general surgery, both immediate and remote, are well known to the doctor in general practice; he is able, with knowledge born of experience, to advise his patients who have to undergo operations. He is well aware that the outcome of any surgical intervention must be judged, not by its immediate local success or failure, but by its ultimate reaction upon the general well-being of the patient. In not a few cases, an operation, successful from the standpoint of the surgeon, has a lamentable effect upon the mental outlook of the patient.

In ophthalmic surgery the general practitioner is not in the same happy position; his personal experience is generally slight; he is compelled to rely upon the specialist he asks to help him. For this reason I have chosen the *Results of Eye Surgery* as the subject of this lecture. I wish to survey the results of the most important operations, and to study the conditions which influence them for better or for worse. I am relying upon my personal experience, gained during the past 27 years in this country and in Palestine. The majority of my operations have been performed at the

Birmingham Eye Hospital, and at the Coventry and Leamington General Hospitals. Whereas the conditions vary in these institutions, and the class of patient is not quite the same, useful information can be gained by a comparison of the results obtained in each.

Cataract Extraction

The main interest in eye surgery has always centred round operations for the extraction of senile cataract; success is almost dramatic; and makes a strong appeal to the public; failure is tragic both for the surgeon and his patient. The results of cataract extraction can be expressed in figures, hence an analysis of a series of extractions is a measure of the efficiency of the work performed.

Extraction is by far the most difficult of all the operations upon the eye, probably the most exacting of all surgical procedures. Success demands reasonable dexterity on the part of the surgeon, intelligent co-operation by the patient, and first-class nursing. Of all ophthalmic operations, extraction, with its wide incision close to vascular structures of the highest importance to the integrity of the organ, is most liable to infection, with loss of sight, either from a frank suppuration, panophthalmitis, or not less surely from a low-grade inflammation of the pigmented structures of the eye, the iris, ciliary body, and choroid. A further terror is sympathetic ophthalmitis, which, often when least expected may rob the patient of the sight of both eyes. Operations for cataract may be followed by mental derangement, transient or permanent. About 2·5 per cent. of my patients have shown mental symptoms, three of whom died from acute mania, and two committed suicide.

The results of extraction are influenced by four factors: the skill of the surgeon; the character of the nursing; the behaviour and condition of the patient, and the nature of the environment.

The skill of the surgeon is not all-important. An operator of great manual dexterity who is careless about the general condition of his patient, and who is not backed up by good nursing, will not get such a high average of success as the good ordinary man who takes pains to see that all possible sources of infection are treated before the operation, and is happy in the help of a good sister. A surgeon with long experience will get out of a difficult situation which would be fatal to a beginner, and a really bad operator will have many failures. A skilful operator with light hands will obtain a high percentage of first-class results, but good organization reduces the number of total failures, so in the long run the average man who takes trouble will get many good results and few failures.

The character of the nursing is of vital import. A clever sister leads her patients to the operating table in a quiet and optimistic

frame of mind, they lie as though under general anaesthesia, and it is rare for the surgeon to be troubled with a case of squeezing. On the other hand a sister with little experience of eye work may, with the best intention in the world, bring her patient to operation in an anxious frame of mind. He is fearful and nervous, and may ruin the surgeon's work by his inability to keep still and avoid squeezing. At the Birmingham Eye Hospital and at the Coventry Hospital, where the sisters are specialists in eye work, the loss of vitreous, which is an index of the patient's behaviour, is 6·5 per cent. At the Warneford Hospital, where the eye cases are nursed in general wards the figure is 17 per cent. We shall see later on that there is another cause for this complication, and as a set off we must state that during the past 12 years not a single eye has been lost after an eye operation in this institution.

The condition of the patient is probably the most important factor in success. It is obvious that a thoroughly unruly man may spoil his operation on the table. Such tragedies are infrequent in this country, but in Palestine they were more common. I have known a patient give a tremendous squeeze the moment the incision was completed and project his lens on to his chest, with large loss of vitreous; fortunately the recuperative power of these people is so great that the majority recover with adequate acuity of vision.

Infection of the eye may come from within or from without. External infection springs from the lacrymal sac and the conjunctiva, and from the mouth of the surgeon if he does not wear a mask. Actual suppuration is almost always due to pneumococci derived from the lacrymal sac. A careful investigation of the lacrymal passages is made before operation, and if there is pus in the sac it is excised before the major operation. Cultures from the conjunctival sac should afford some protection, but unfortunately practically all my cases of panophthalmitis have given sterile cultures.

Although it is a dangerous doctrine to preach, I feel confident that some of the cases of low-grade cyclitis are due to endogenous infection. Common sources are; the teeth, tonsils, nasal sinuses, ears, abdominal foci such as the gall bladder, bacilluria and pelvic infection. Rarer foci are suppuration under a toenail, umbilical sepsis, pus formation under a bunion, whitlows and boils. All these conditions have in my practice caused inflammation of the eye apart from any operation, and must be excluded before the globe is opened.

The general health of the patient is of great importance. A case of leucaemia was overlooked, and the eye was lost from cyclitis. Another patient had a large uterine fibroid and she did none too well. During the years 1917 and 1918 I extracted 40 lenses at the Birmingham Eye Hospital. 17·5 per cent. of

the eyes came to excision. During the years 1920 to 1930 only 3·3 per cent of 60 extractions were excised. That is to say, that during the former period the loss after extraction was five times what it should be. I think that the cause of the failures is that the years in question were at the end of the great war. The patients were often badly nourished, worried, and anxious, and bad cases for operation. Further, the hospital was understaffed and the investigations previous to operation could not be carried out as thoroughly as they are in normal times.

Diabetes.—Uhthoff stated that the results of extractions in diabetics are as good as in the sugar-free. My own experience does not substantiate this view. It is true that the majority of diabetics do well, but the tendency to inflammatory reaction is definitely greater than in normal patients. During the past three years at the Coventry Hospital we have lost only one eye among about 700 operations of all kinds. This was a female diabetic. I extracted her lens and six months later I had to excise the eye. It is my practice to put these patients upon a Graham diet and to operate only when they are sugar-free.

The general temperament of the patient is very important. A patient who sits up with a knife threaded through his eye cannot expect success. The high percentage of vitreous loss at the Leamington Hospital is partly due to the fact that many of the patients come from remote country districts. Quite half the patients are difficult and unsteady, and although in all cases novocaine was injected to paralyze the facial nerve, many of them were bad squeezers. The average agricultural labourer is a worse cataract patient than the town-dweller.

The environment of the operation.—The operation may be performed at an eye hospital, in the special eye-wards of a general hospital, in the ordinary surgical or medical wards, in a nursing home, or at the patient's own home. From 1910 to 1918 my patients at the Warneford Hospital were housed in the surgical wards. Fifty extractions were done, and seven eyes were subsequently excised. During the past 13 years the eye patients have been admitted to the medical wards, and the cataracts have been in sidewards. In this period 30 lenses were removed and not one eye was excised. Ninety per cent. obtained useful acuity. It is obvious that in a surgical ward the risk of infection is great, and that the eye patients are disturbed and frightened by the horrors they see and hear. Patients who are admitted to eye-wards have the opportunity of talking to others who have already been through the operation. They are told that, " they have nothing to fear," and approach the ordeal with confidence. There is virtue in the " ophthalmic atmosphere." I regard a nursing home, unless it is specially organized for eye work, and has ophthalmically trained

nurses, as unsuitable for eye operations. Generally, the patient is put upon the same table that has been used for septic operations, and is nursed by those without special training. If I cannot place my private patients into one of the private-wards of an eye hospital I prefer to operate in their own homes. I have done this several times, occasionally in small, not overclean cottages, and not one of these patients has caused me the slightest anxiety.

Statistics—1920 to 1930

I have analyzed the records of my extractions for the last ten years at the three institutions previously mentioned with the following results:

Birmingham Eye Hospital.—60 eyes. Useful acuity: 70 per cent. Failure: 10 per cent. Excised: 3·3 per cent. No record: 20 per cent.

Coventry Hospital.—107 eyes. Useful acuity: 90 per cent. Failure: 5·6 per cent. Excised: 1·9 per cent. No record: 3·8 per cent.

Leamington Hospital.—30 eyes. Useful acuity: 90 per cent. Failure: 3·4 per cent. No record: 6·7 per cent. Excised: 0 per cent.

Private Patients.—60 eyes. Useful acuity: 95 per cent. Failure: 5 per cent. Excised: 3·3 per cent.

The low percentage of success recorded at the Birmingham Eye Hospital is largely accounted for by the fact that in 20 per cent. of the cases the notes gave no indication of the result obtained. In most cases the patient did not reappear after his discharge, and no refraction had been done. Probably many of these patients were satisfied with the vision they obtained without glasses, and if we add three-quarters of them to our list of successes we get 85 per cent. of useful acuity. My colleague, Mr. Charles Rudd, then Surgical Registrar to the hospital, analyzed the cataract work of all the surgeons to the Birmingham Eye Hospital over a period of three recent years. He excluded all those cases in which the notes did not indicate the result of the operation. 162 eyes were included, 58 excluded. This method is obviously unfair to the surgeon because it greatly increases the percentage of loss and failure. Those patients whose eyes were excised were all in the list and probably the majority of those not included were more or less successful. The results were as follows:—Number of eyes: 162. Useful acuity: 87 per cent. Failures: 13 per cent. Excised: 6·2 per cent. (or excision recommended.) At *The British Ophthalmic Hospital, Jerusalem,* before the war I extracted 64 lenses with the following results:—Useful acuity: 93 per cent. Excised: 7·5 per cent.

Vitreous was lost in 17 per cent. The failures were due to: panophthalmitis: one case. Sympathetic ophthalmitis: one case. Excessive loss of vitreous: two cases. We must bear in mind that "useful acuity" in England and in Palestine are not synonymous terms. A Bedwân with an acuity without glasses of 6/60 would be perfectly satisfied; "I was blind, now I see, *el hamd il Allah*."

The good results obtained were largely due to the fact that in Palestine post-operative cyclitis was practically unknown.

Many of the cases classed as failures in my general statistics were in reality surgical successes. The poor acuity was often due to fundus disease, amblyopia, and other causes beyond the reach of the surgeon.

To summarize: a patient in reasonable health, operated upon by a surgeon of sufficient ability, well nursed under good conditions, has at least a 90 per cent. chance of obtaining good acuity after an operation for extraction of cataract.

Extraction of Dislocated Lenses

This operation is the most difficult form of extraction, so much so that in some cases it is almost impossible, and it may be necessary to abandon the operation.

Congenital dislocation is generally a familial fault, and may be classified with reference to the degree of development of the suspensory ligament. The condition of the zonule is of such prime importance from the operative standpoint that no treatment should be undertaken until the eye has been carefully examined with the slit-lamp. The sight is often so bad that something must be done to improve it.

The first stage is a preliminary iridectomy. This can be performed only with the iris-hook, for it is impossible to seize the iris with forceps. The coloboma is laid opposite to the visible edge of the lens.

If there is a perfect suspensory ligament, treatment had better end here, for it is practically impossible to remove the lens with success. If on the other hand the zonule is absent or very imperfect, extraction may be attempted. A corneal incision is made with Smith's knife across the axis of the coloboma, and the lens is removed with Taylor's vectis. There is generally considerable loss of vitreous, and a strong tendency for the iris to prolapse. Subsequent cyclitis is not uncommon.

I have notes of six operations of this kind. Four were successful, but in two cases the eye was excised, a loss of 33·3 per cent. In both these cases the zonule was well developed and the lens was removed piecemeal. There was in each case considerable loss of vitreous, the iris prolapsed, and a low-grade cyclitis compelled removal of a dangerous eye.

Traumatic dislocation.—If the lens has fallen into the vitreous and remains there, it is best left alone, and generally does no harm. These cases are not parallel with those of reclination as practised in the East. A couched eye is an infected eye, and sooner or later chronic cyclitis sets in.

If the dislocated lens from time to time enters the anterior chamber, operation is essential, because it may become impacted and cause intractable glaucoma. Here again, if the lens is in the vitreous, preliminary iridectomy is advisable. The lens, if it is opaque, can now be removed from the vitreous. A large corneal section is made, and a strong beam of light directed upon the lens. It is gently drawn forward with the lens hook, a flat spoon is slipped behind it, and then it is expressed. Often there is no loss of vitreous. A transparent lens is not visible in the vitreous, and it is practically impossible to remove it. After an iridectomy the lens does not become impacted in the anterior chamber, and it is unwise to risk the loss of the eye by attempting to extract an invisible lens. When the lens is actually in the anterior chamber it is best to operate with the patient sitting in a chair, and often a downward section is best.

During the past ten years I have extracted four lenses from the anterior chamber. All the operations were immediately successful, but three of the patients never returned after their discharge and I have not been able to trace them. The fourth case made a good recovery with a corrected acuity of 6/18. Two lenses were removed from the vitreous without any loss of vitreous. Both left the hospital with quiet eyes, but neither returned.

The Birmingham Eye Hospital has now appointed an almoner to follow up operation cases.

Glaucoma

Secondary glaucoma.—Many conditions may cause a rise in the intra-ocular pressure; tumours, haemorrhages, and inflammation, may all be associated with glaucoma. Occasionally an eye from which a cataract has been removed may become unduly hard. Each case has to be treated on its merits, and the final result depends so much upon the condition present that it is impossible to give statistics of any value. An eye containing a tumour is always excised, and if this is done before the neoplasm has invaded the optic nerve, or perforated the sclera, local recurrence and dissemination are rare events. I can think of only three cases in which this took place. On the other hand, when the growth has passed beyond these prescribed limits, death is practically inevitable. It is possible that the use of radium after exenteration of the orbit, may save some of these patients. Early diagnosis is essential

and in doubtful cases, especially in children, it is wise to err on the side of safety.

Glaucoma following intra-ocular haemorrhage or thrombosis of the central vein is difficult to treat. I have succeeded in reducing the tension to normal by trephining, but the majority do very badly, and often the eye must be removed to relieve pain.

Glaucoma following a cataract operation is generally caused by the impaction of lens capsule in the wound. The iridic angle becomes blocked by cell proliferation, and the condition is very unfavourable. Nevertheless, some eyes do well after trephining.

Irido-cyclitis is often associated with glaucoma, in fact the eye may become stone-hard. Many cases recover under atropine and general treatment of the cause of the inflammation. In others the eye remains hard and an operation is necessary. There are unhappily many cases of glaucoma due to cyclitis that do not yield to any type of operation. It is difficult to decide whether to operate or not, and to choose the most suitable method. Generally speaking, an eye which will not get soft under atropine is not cured by an operation, which is indeed often but a forlorn hope. We should direct our energies to careful treatment of the cyclitis, and so avoid this dangerous complication. The worst case is a neglected sympathetic ophthalmitis. Early treatment with atropine and a full course of N.A.B. has in my hands given most satisfactory results. All my recent cases have recovered, but the slit-lamp must be used, and a very early diagnosis made.

When the whole ring of the iris has become luted to the anterior lens capsule by inflammatory exudate, the path of excretion is blocked. The aqueous accumulated behind the iris bulges it forward to form the well-known *iris bombé*. A small iridectomy lowers the pressure, but the visual result must depend upon the clarity of the media. If the anterior capsule is covered with pigment and exudate, it is obvious that the sight will remain bad, but in time absorption may take place with some restoration of vision. In this connection we may mention that class of recurrent iritis caused by the constant drag of adhesions. Here iridectomy is most satisfactory and is not performed as often as it should be.

Primary glaucoma.—Many cases apparently primary prove on examination with the slit-lamp to be really secondary. When, however, the original inflammatory basis has subsided for some years, or is of a very chronic low-grade type, we must for the purposes of treatment consider them to be primary.

Congestive or acute glaucoma.—The results of treatment depend to a very large extent upon the stage at which the patient presents himself. If an acute case be treated at once with eserine recovery is common, and this treatment should be tried before rushing to operation. Cases that do not react to conservative

treatment are often resistant or complicated cases and operation is not always successful.

The operation of choice is iridectomy, but the experience of the surgeon may teach him that the case is not likely to be cured by this simple intervention, and he may decide upon some form of sclerectomy. My statistics for trephining in acute glaucoma show a high percentage of failure, but this is in the main due to the fact that those cases submitted to the trephine were more severe than those selected for iridectomy.

Iridectomy probably effects its object by freeing the iridic angle from iris. For this reason it is unnecesary to remove a large area of the iris, the main thing is to excise the root of the iris. The old-fashioned, so-called, " classical iridectomy," where two-fifths of the iris was removed, is a brutal mutilation. A narrow iridectomy that reaches the base of the iris is equally efficient. My operation of *trap-door iridectomy* removes the base of the iris with safety and certainty. The operation is the same as trephining, with this exception: at the last stage of its work the trephine is inclined towards the patient's chin so that the disc is cut with a hinge. The iris prolapses, it is drawn out to its full extent, excised, and the trap-door of sclera is closed. This operation has several advantages: there is no danger of wounding the lens, there is no post-operative astigmatism, and the iris excision is peripheral, for the opening in the sclera is directly over the root of the iris. Incidentally, it is not unusual to get some definite filtration, which is all to the good. As far as I know there are no disadvantages.

Iridectomy may fail to reduce the tension, and further operative treatment may be necessary. After a trap-door iridectomy, we merely retrephine in the original situation, this time removing the scleral disc. If repeated operation fails to cure the glaucoma we must not overlook the possibility of an intra-ocular tumour, and it is generally wise to remove the eye.

Non-congestive glaucoma (*glaucoma simplex*).—In this insidious disease rise of tension is only one of the signs. In some cases, rare it is true, we note progressive loss of the peripheral field with a nasal step, enlargement of the blind-spot, increasing excavation of the disc, perhaps some loss of central acuity, unaccompanied by any rise of intra-ocular pressure, as measured by the tonometer. Not infrequently similar progressive deterioration is noted after the tension has been reduced by operation to normal or even to sub-normal. It is meddlesome surgery to operate when repeated determinations with the tonometer fail to reveal any rise of intra-ocular pressure. I emphasize the use of the tonometer, because testing with the fingers gives erroneous results.

The outcome of surgery for glaucoma simplex depends upon early operation. When once we have decided that the disease is

present, and that it is beginning to cause loss of function, then operation is imperative. A certain class of case can be kept in check with miotics, but such must be constantly watched, the visual fields should be investigated frequently and the visual acuity tested. Glaucoma simplex is a treacherous disease; we may observe a case for months and find no deterioration, and then *perhaps in a few weeks*, the discs become deeply cupped, and the fields contract. Another danger is the formation of a central scotoma (Bjerrum and Siedl), which, without any warning, invades the fixation spot, and causes permanent loss of central vision.

The old-fashioned iridectomy introduced by von Graefe, was a notable advance in treatment, but it cures only about 40 per cent. of the cases, and most of these have a filtering scar. Modern operations attempt by various methods to form a permeable cicatrix.

Trephining is the favourite operation in this country, but it is not popular on the Continent, and it is losing ground in America. There is no doubt that a very large number of cases are cured. I have patients whom I trephined 15 years ago who still have good sight and full fields. Some years ago I analyzed the results of a large number of my operations for glaucoma. I found that 75 per cent. of the trephining operations were successful. My present series of 50 patients gives 70 per cent. There is, unfortunately, another side to the shield. The failures after trephining are apt to be serious, and there are among them several total losses. The anterior chamber may remain unfilled for a long time, and nuclear cataract develops. Apart from late formation of the chamber, cataract is a frequent complication. Post-operative iritis is very common, generally it is slight, but it may be serious. A large percentage of the successful cases develop an ectatic cicatrix. This is not only very unsightly, and uncomfortable, but it is a definite source of danger. An eye with a weak scar it liable to infection. *Late-infection*, starting a year or more after the operation, is occasionally seen. Fortunately, it generally yields to treatment, but the infection is recurrent, and about 1 per cent. of eyes submitted to the trephine are lost by a late-infection. During the past five years I have more and more given up trephining for the operation of *iridencleisis* or iridotasis. An incision is made in the conjunctiva about 10 mm. from the limbus, and a pouch is made with scissors. A narrow keratone is entered about 3 or 4 mm. from the limbus, and a long slanting passage is made into the anterior chamber. The iris is seized at the sphincter with Matthieu's forceps, which open easily in a narrow channel, and the iris is drawn out. The sphincter is incised with scissors, and the iris left prolapsed under the conjunctiva. I have collected the notes of 25

cases of glaucoma simplex treated by iridencleisis. Eighty per cent. have been successful, that is to say, the tension was permanently reduced to normal, and there have been no losses. No case developed cataract. On the other hand it is only fair to say that the cases that have been treated by iridencleisis have on the whole been of a milder type than those that were trephined. I have selected my cases, some for the trephine others for iridencleisis. Again, few of the cases have been watched for more than five years. Some of the unsuccessful cases have been subsequently trephined with success. It has been urged that iridencleisis is a dangerous procedure, one likely to cause sympathetic ophthalmitis. So far, I have had no trouble of this kind, and I know of no recorded case of sympathetic inflammation. The operation in one form or another has for many years now been employed on the Continent and in America, and is most enthusiastically recommended by Colonel Herbert. Iridencleisis causes very little reaction, no more than an ordinary preliminary iridectomy. This is in strong contrast to trephining, which is always followed by considerable injection and irritation. The dangerous and unsightly blebs that we have mentioned after trephining are very rarely seen. When the anterior chamber is very shallow it is so difficult and dangerous to insert the keratome that I prefer to use the trephine and avoid the possibility of wounding the lens.

Other methods of sclerectomy, such as the Lagrange, are equally successful in the hands of those who have specialized in the technique.

Strabismus

An operation for squint is performed only when other methods of treatment have failed to cure the deformity. The child has worn a correction for his hypermetropia for at least a year, amblyopia has been treated by complete occlusion of the better eye, and perhaps fusion training may have been tried. In the majority of cases that I have operated upon, the angle of convergence has been 30 or more degrees, often 40° or more. I have found that the optimum age is eight: most children of this age are sensible enough for local anaesthesia to be used. Older children are apt to be apprehensive, and I find that more children over eight require general anaesthesia than those under this age.

In by far the larger number of my operations I have attacked both the external and internal recti. In adults, when the angle of deviation is small, advancement of a lateral rectus has been sufficient, but in children the pull of the medial rectus tends to make the advancement sutures cut out, and the operation fails. In older persons the sclera is tougher, and the stitches remain in position.

Tenotomy is a thoroughly bad, unsurgical procedure, and for the past 10 years or more I have given it up. It should be obvious that the result of cutting a tendon and allowing it to re-attach itself where it likes must be uncertain. In effect many eyes that have been treated in this manner diverge, and in a very large number muscle tests show insufficiency of convergence.

Recession, an operation where the tenotomized muscle is re-attached to the sclera in the desired situation is far better both in theory and practice.

Statistics—1920 to 1930

I have collected the records of 75 operations for convergent strabismus. I have actually operated upon a much larger number, but in many cases the final result was recorded, not on the hospital notes, but at the Coventry School Clinic. It would have been possible to collect the cards, but I did not wish to give the school nurse the immense amount of trouble necessary to find them, extending as they do over a large number of years.

Recession and advancement.

Number of cases	50
Successful	90 per cent.
Divergence	0 per cent.
Convergence insufficiency	2 per cent.
Average effect	28°

Tenotomy and advancement.

Number of cases	23
Successful	75 per cent.
Divergence	14·4 per cent.
Average effect	26°

It is obvious from these figures that recession is far better than tenotomy of the internal rectus.

In 1916, I analyzed the results of 75 operations for squint performed at the Coventry and Leamington Hospitals with the following results:—

Average initial convergence	14°	
Average age	10 years.	
Average effect	27°	
Complete success	50 per cent.	87 per cent.
Partial success	37 per cent.	
Failure	12 per cent.	
Divergence	5 per cent.	

Practically all these operations were tenotomy and Worth's advancement. I now use a far simpler and better method of advancement. (The full paper will be found in the *Ophthalmoscope*, Vol. XIV, p. 636.)

It is interesting that in both series, using different methods, the average effect of the operation is 27°. Roughly, one may say that an advancement gives 15° and tenotomy or recession an equal

amount. Hence, if the initial convergence is 45°, we may expect a residual convergence of 15°, and it is often necessary to operate upon both eyes.

There is a definite tendency for a convergent squint to undergo spontaneous cure, so a slight convergence after an operation may be expected to disappear after a time, and in effect it does so. On the other hand, if one eye is amblyopic, and there is no desire for fusion, an eye in good position after an operation may diverge in course of time. It is therefore no detriment if there is some residual convergence after operation, and I have classed those cases with slight residual convergence as successful.

Excision of the Lacrymal Sac

I have not taken out the statistics of this operation. I have performed it probably four or five hundred times and the results have been excellent. In a very few cases persistent lacrymation has been troublesome after the operation. In these cases I reopen the operation area and generally find sclerosed tissues and occasionally some remnants of the sac which have been keeping up the irritation. Occasionally a collection of pus has formed in the lacrymal fossa, and re-operation has discovered what appears like a new sac, really a lined abscess cavity. When this is removed there is no further trouble.

I have no experience of Toti's operation, but I have sent some of my cases to a rhinologist for West's operation. Some of these have been unsatisfactory, and others have passed out of my ken, but on the whole I have not been impressed with the results. At the Oxford Congress in 1929, Professor Meller, of Vienna, opened the discussion on the treatment of lacrymal disease. He treated the matter very judicially, and came to the conclusion that: if the ophthalmologist has at his service a rhinologist *who has perfected the very difficult technique of the operation*, he will do well to refer to him selected cases of lacrymal suppuration, otherwise, excision is the best procedure.

The Removal of Foreign Bodies from the Eye

If the foreign body is *non-magnetizable* it can be removed only when it is visible. In practice this means that it must be in the anterior chamber. Cilia are occasionally seen in this situation, generally lying on the iris. In most cases they have entered through an actual wound in the cornea, but I recollect one case in which no opening could be found. The eye had been struck by a heavy chain, and two lashes were seen on the iris. It is not difficult to make an incision with a keratome and pick them out with fine forceps, but they may do little if any harm, and I have in two recent

cases left them alone. Bits of stone after quarry explosions are in the main well tolerated. Fragments of glass are very difficult to remove, and if sterile are often retained without irritation. Some things can be washed out, others picked out, many resist all efforts to dislodge them.

Magnetizable foreign bodies, spicules of iron, and most varieties of steel, are extracted with the giant magnet. The Mellinger Ring Magnet is the most practical instrument, but the Haab is the most powerful. I have removed seven or eight bits of steel with the Haab that resisted the Mellinger. Fortunately both at Birmingham and at Coventry I have the two.

The results depend upon three factors: the cleanliness of the fragment, its size, and the condition of the lens. A septic fragment may infect the eye, which is at once lost from suppurative endophthalmitis, or later from chronic uveitis. Fortunately, the majority of metallic foreign bodies are sterile. A large mass of metal may cause so much mechanical damage that there is no hope of saving the eye. If the lens is wounded there is a greater tendency to inflammation and cataract develops. This is often localized, but the whole lens may become opaque, and have to be removed.

If the fragment is small, and sterile, and has not wounded the lens, the results are in the main excellent. Even when cataract develops and the lens has to be evacuated, it is the rule to obtain good vision. Sometimes the fragment will not come forward by the ordinary Haab technique, and has to be extracted through a scleral incision. These patients as a rule do well, but some of them lose their sight later on from detachment of the retina.

It has been impossible in the time at my disposal to do more than consider the results of the chief operations upon the eye. Taken as a whole they are at least as good as those obtained in any other branch of surgery. Probably not more than 0·25 per cent. of the operations which open the globe are followed by suppuration, and well over 95 per cent. are successful in the surgical sense. The remarkable freedom from suppuration shown by wounds of the eye, whether surgical or accidental, is due to the fact pointed out by F. Ridley, a Birmingham graduate, that the tears contain a lysozyme which is a very powerful bactericide. Continued lacrymation diminishes the amount of this substance in the tears, and for this reason I deprecate any pre-operative treatment which causes a flow of tears. I believe that the use of strong antiseptics so favoured by the Indian school of ophthalmologists is harmful. I now simply wash out the eye with normal saline before an operation, and my present results are better than they were when I used antiseptics. If the eye is free from mucus it is probably better not to wash it out at all. Nature has provided the antiseptic and it is an excellent one.

STATISTICS OF OPERATIONS.

GLAUCOMA, 1920 to 1930.

Total number of cases			128
Chronic glaucoma	-	Number of cases	75
Iridencleisis	- -	Number of cases	25
		Successful	82 per cent.
		Cataract	0 per cent.
		Excision	0 per cent.
Trephining	- -	Number of cases	50
		Successful	70 per cent.
		Cataract	10 per cent.
		Excised	4 per cent.
Acute glaucoma	- -	Number of cases	53
Trap-door iridectomy.		Number of cases	15
		Successful	80 per cent.
		Excised	1·9 per cent.
Iridencleisis	- -	Number of cases	10
		Successful	100 per cent.
Trephining	- -	Number of cases	26
		Successful	54 per cent.
		Excised	24 per cent.*
Iridectomy	- -	Number of cases	2
		Successful	100 per cent.

* Many of these were severe, neglected, or complicated cases.

300 EXTRACTIONS (1920 to 1930).

Visions:			
6/6	16·0 per cent.	57 per cent.	83·3 per cent. useful acuity.
6/9	22·3 per cent.		
6/12	18·7 per cent.		
6/18	14·3 per cent.	26·3 per cent.	
6/24	8·3 per cent.		
6/36	3·7 per cent.		
6/60	1·7 per cent.	9·7 per cent.	9·7 per cent. failure.
<6/60	3·3 per cent.		
Excised	4·7 per cent.		
Unknown	7·0 per cent.		

In all probability the majority of the patients with unknown results obtained useful acuity. If we add them to the successful cases we get the following figures:—

Successful	90 per cent.
Failure	10 per cent.

Analysis of causes of excision.

Number of eyes	300	
Excised	14	= 4·7 per cent.

Panophthalmitis. 4 cases = 1·3 per cent.

(*a*) A bad squeezer, large loss of vitreous.

(*b*) Became maniacal after operation. Got out of bed and pulled his bandages off.

(*c*) Operation in a nursing home under bad conditions.

(*d*) Cause not found, sterile culture, normal operation.

Irido-cyclitis. 10 cases = 3·3 per cent.

(*a*) No known cause.
(*b*) Diabetes. (Eye excised six months after the operation.)
(*c*) Paranoia and acute mania. Violent squeezer. Lost much vitreous.
(*d*) Septic gall bladder.
(*e*) Leucaemia. Very large spleen.
(*f*) Vectis extraction, but no loss of vitreous.
(*g*) Prolapse of iris, developed sympathetic ophthalmitis.
(*h*) Nasal sinus disease. Polypi in nose.
(*i*) Mania. Bad squeezer. Lost much vitreous.
(*j*) Diabetes.

500 EXTRACTIONS PERFORMED IN ENGLAND (1907 to 1930).

Combined extraction	19·4 per cent.
After preliminary iridectomy	77·4 per cent.
Simple extraction	3·2 per cent.
Discission	20 per cent.
Vitreous loss	6 per cent.
Iris encleisis	7 per cent.

Visions:

6/6	17·0 per cent.		
6/9	20·8 per cent.	57·6 per cent.	
6/12	19·8 per cent.		85 per cent. useful acuity.
6/18	14·2 per cent.		
6/24	8·6 per cent.	27·4 per cent.	
6/36	4·6 per cent.		
6/60	2·2 per cent.		
<6/60	3·2 per cent.	11·0 per cent.	11·0 per cent. failure.
Excised ...	5·6 per cent.		
Unknown ...	4·0 per cent.		

PRIVATE EXTRACTIONS.

Number of lenses extracted...	60
Combined extraction	60 per cent.
After preliminary iridectomy	36·7 per cent.
Simple extraction	3·3 per cent.
Discission	21·7 per cent.
Vitreous losses...	1·7 per cent.
Iris encleisis	5·0 per cent.

Visions:

6/6	28·3 per cent.		
6/9	31·7 per cent.	76·7 per cent.	
6/12	16·7 per cent.		95·0 per cent. useful acuity.
6/18	11·6 per cent.		
6/24	5·0 per cent.	18·3 per cent.	
6/36	1·7 per cent.		
6/60	1·6 per cent.		
Excised ...	3·4 per cent.	5·0 per cent.	5·0 per cent. failure.

It is useful to note that the loss of vitreous in private patients is only 1·7 per cent. compared with 6 per cent. in hospital patients.

EXTRACTIONS AT THE BIRMINGHAM EYE HOSPITAL (1920 to 1930).

Lenses extracted	60
Combined extraction	16·6 per cent.
After preliminary iridectomy	83·4 per cent.
Discission	16·6 per cent.
Vitreous loss	6·6 per cent.
Iris encleisis	8·3 per cent.

Visions:

6/6	10·0 per cent.		
6/9	15·0 per cent.	50 per cent.	
6/12	25·0 per cent.		70 per cent. useful acuity.
6/18	11·6 per cent.		
6/24	1·6 per cent.	18·2 per cent.	
6/36	5·0 per cent.		
6/60	1·8 per cent		
<6/60	6·7 per cent.	11·8 per cent.	11·8 per cent. failure.
Excised ...	3·3 per cent.		
Unknown ...	20·0 per cent.		

If 15 of the 20 per cent. unknown results be added to the successes we get roughly:

Successful	85 per cent.
Failure	12 per cent.

EXTRACTIONS AT THE COVENTRY HOSPITAL (1920 to 1930).

Lenses extracted	107
Combined extraction	16 per cent.
After preliminary iridectomy	74 per cent.
Simple extraction	10 per cent.
Discission	17 per cent.
Vitreous loss	6·5 per cent.
Iris encleisis	10·0 per cent.

Visions:

6/6	17·6 per cent.		
6/9	30·0 per cent.	62·6 per cent.	
6/12	15·0 per cent.		90 per cent. useful acuity.
6/18	12·1 per cent.		
6/24	11·2 per cent.	28·0 per cent.	
6/36	4·7 per cent.		
6/60	0·9 per cent.		
<6/60	2·8 per cent.	5·6 per cent.	5·6 per cent. failure.
Excised ..	1·9 per cent.		
Unknown ...	3·8 per cent.		

EXTRACTIONS AT THE LEAMINGTON HOSPITAL (1920 to 1930).

Lenses extracted	30
Combined extraction	23·4 per cent.
After preliminary iridectomy	73·4 per cent.
Simple extraction	3·2 per cent.
Discission	34 per cent.
Vitreous loss	17 per cent.
Iris encleisis	13 per cent.

Visions:

6/6	13·4 per cent.		
6/9	16·7 per cent.	46·8 per cent.	
6/12	16·7 per cent.		90 per cent. useful acuity.
6/18	23·4 per cent.		
6/24	20·0 per cent.	43·4 per cent.	
6/36	0·0 per cent.		
6/60	3·3 per cent.		
Excised ...	0·0 per cent.	3·3 per cent.	3·3 per cent. failure.
Unknown ...	6·7 per cent.		

THE ROYAL WESTMINSTER OPHTHALMIC HOSPITAL AND ITS STAFF IN THE PAST

BY

ADRIAN CADDY

LONDON

As the five ophthalmic hospitals in London have been rebuilt within recent years I have thought that it might be of interest to record something of the members of the Staff of the Royal Westminster Ophthalmic Hospital during the early period of its existence and of the various hospital buildings in which they worked.

The first hospital in London specially devoted to diseases of the eye was the " London Infirmary for curing Diseases of the Eye " opened in 1805 at 40 Charterhouse Street, the forerunner of the present Moorfields Eye Hospital. An eye hospital was opened " under Royal Patronage in Westminster " in 1804-5 but it seems to have collapsed. In 1816, Guthrie, who had served through the Peninsular War as an Army Surgeon, succeeded in influencing the Duke of Wellington to help in the founding of an eye hospital. Both had been much shocked at the amount of eye disease among the troops in the Peninsula. A notice of the proposed infirmary was published in the *Morning Chronicle* for Saturday, December 7, 1816.

A framed copy of the newspaper exists in the Secretary's office at the Royal Westminster Ophthalmic Hospital. In it occurs the following:—

" THATCHED HOUSE TAVERN, 5th December, 1816.

The Right Honourable Lord LYNEDOCH in the Chair.

At a numerous meeting of NOBLEMEN and GENTLEMEN, it was proposed to establish an INFIRMARY for the CURE of DISEASES of the EYE in the western part of the Metropolis, for the relief of the poor and as a school of instruction, certain resolutions were adopted to promote this most important object and a Committee appointed to make the necessary arrangements for the establishment of the Institution.

Patron——His Royal Highness the Duke of York, K.G.

President——His Grace the Duke of Wellington, K.G.

That a Committee be formed for the purpose of regulating the affairs of the Institution, who will report their proceedings to the next meeting of Governors.

President—Lord Lynedoch. Members—Sir Thomas Bell, S. Reed, Esquire.

Treasurers—Dr. C. F. Forbes, G. J. Guthrie, Esquire.

That the Medical Officers of the Establishment consist of one Physician, Dr. C. F. Forbes, Member of the Royal College of Physicians, Physician to His Royal Highness the Duke of Kent and to the Surrey Dispensary, Deputy Inspector of Military Hospitals, etc., etc., and of one Surgeon viz.—Mr. Guthrie, Member of the Royal College of Surgeons, Deputy Inspector of Military Hospitals, Lecturer on Surgery in London, etc., etc.

That to give immediate effect to this Institution, the poor will be relieved, until a proper place can be provided, on Mondays, Wednesdays and Fridays, between the hours of half past nine and eleven, at Mr. Guthrie's house, No. 2 Berkeley Street, Berkeley Square."

The original title of the hospital was " The Royal Westminster Infirmary for the Cure of Diseases of the Eye." The hospital was first in Mary-le-Bone Street, Piccadilly. This street is now the eastern part of Glasshouse Street. Later it was moved to Warwick Street, Golden Square. In 1832, it was moved to King William Street, West Strand. Its home was the western corner of the island site on which Charing Cross Hospital now stands. In those days it was separated by Toole's Theatre from Charing Cross Hospital. It was reconstructed and extended in 1900 and 1906 and again in 1912. In 1910, Charing Cross Hospital abolished its Ophthalmic Department, the work being undertaken by the Royal Westminster Ophthalmic Hospital. Lastly, owing to the continued extension of its work and the cramped conditions under which it was done, it was decided to make a move to a new site, as the existing one gave no scope for expansion.

In 1926, a suitable piece of land was purchased in Broad Street, Holborn. Broad Street was the original main thoroughfare to the west until New Oxford Street was constructed in 1836 cutting off the bend in the road. A fine eight-storey building in red brick was erected on the site at a cost of £130,000 and opened for use in 1928. It is a building with a magnificent outlook over London. From the roof Hampstead, Blackheath, and the Crystal Palace are easily seen. One suspects that given favourable meteorological conditions even Windsor Castle might sail into view. It is a living tribute to the skill of the architects in designing such light and airy wards on a site in the midst of a dense population. It contains features which are still uncommon in most hospitals, namely an extensive suite of private rooms for paying patients. These are really private rooms and are not cubicles or portions of a ward separated by canvas partitions. There is also a Light Department where cases are subjected to ultra-violet

light, diathermy or ionization. A Squint Department is also in operation where ocular exercises are undertaken for cases of squint both before and after operation. The present building contains 86 beds and is capable of being extended to 100 beds.

Eye hospitals in London as well as in the Provinces are tending to increase the number of private rooms, as experience shows that the average nursing home is unable to deal with eye cases as satisfactorily as the eye hospitals owing to the lack of trained ophthalmic nurses and the absence of experienced resident medical officers. Municipalization of hospitals will probably affect the eye hospitals last as ophthalmic work is in much more of a watertight compartment than other specialities. Let us hope that this stronghold of the voluntary principle will hold out for many generations.

The founder of the hospital, GEORGE JAMES GUTHRIE, was born on May 8, 1785, in London. His grandfather, a Scotsman, served with the army at the Battle of the Boyne. Qualifying as a Member of the College of Surgeons in 1801, he became Fellow of the College in 1843, being one of the original 300 Fellows. An M.D. of Aberdeen, he was elected Fellow of the Royal Society in 1827. He died in 1856, and was buried at Kensal Green. Guthrie was apprenticed to Mr. Phillips, a surgeon in Pall Mall, at the age of 13 and attended the Windmill Street School of Anatomy. He obtained his Membership at the age of 16 and was at once posted to the 29th Regiment and proceeded to North America, remaining there until 1807. He then returned to England and was immediately ordered to the Peninsula. He served there until 1814. He acted as Principal Medical Officer at the Battle of Albuera and one evening had 3,000 wounded on his hands. He describes himself in his books as Deputy Inspector-General of Army Hospitals during the war in Portugal, Spain, France and the Netherlands.

Guthrie remained on the Staff of the Royal Westminster Ophthalmic Hospital until 1838, being then succeeded by his son, Charles W. Gardiner Guthrie, who was elected Assistant-Surgeon to the Westminster Hospital in 1823, becoming full Surgeon in 1827 and resigning in 1843. He was a Member of the Council of the Royal College of Surgeons from 1824 to 1856, and a Member of the Court of Examiners from 1828 to 1856; Chairman of the Midwifery Board in 1853; Hunterian Orator in 1830; Vice-President of the College five times, President, 1833, 1841, and 1854. He was Hunterian Professor of Anatomy, Physiology and Surgery in 1828 and 1832. He married twice and had two sons and one daughter, none of whom had any children.

Colonel O'Kinealy, C.B.E., of the Indian Medical Service, and an old House Surgeon at the Royal Westminster Ophthalmic

Hospital in 1887, tells me that when he was there Guthrie's " Hell-Fire Eye Lotion " was still being spoken of with respect. James Rouse, who was still on the staff then, having succeeded the younger Guthrie in 1856, was no doubt responsible for this.

Guthrie wrote a monograph in 1834 " On the CERTAINTY and the SAFETY which the OPERATION for the EXTRACTION of a CATARACT from the HUMAN EYE may be performed and on the means by which it is to be accomplished." A lengthy title . . . . This was published by order of the Committee and sold for the benefit of the Royal Westminster Ophthalmic Hospital. 2s. 6d. stitched. This philanthropic publication of medical papers by Hospital Committees might well be re-introduced in these modern times. .

Guthrie begins thus :

" An ancient professor of the *ars oculista* is stated to have said that a man must spoil a hatful of eyes before he could learn to extract a cataract well, that is, he must blind as many people." Guthrie is very emphatic that the eye is not a very sensitive organ. He says that we have been misled owing to our feeling pain when a foreign body enters the eye and causes exquisite discomfort. He says that this is due to the lids rubbing on the cornea. Draw the lids apart and the sensation of pain ceases.

He points out that it would be impossible to perform operations on the eye if it were very sensitive to pain. A further quotation is as follows:—" The woman they say, who hesitates is lost; of this I have no knowledge, but that the surgeon who hesitates in the first stage of the operation (cataract) is very likely to lose his patient's eye, I am certain."

He mentions how Chevalier von Graefe, of Berlin, came to England and was invited to the Royal Westminster Ophthalmic Hospital and asked to do a cataract operation with his new knife. Guthrie remarks after Graefe had done the operation " I was satisfied that he knew as much as I did about it, and I was infinitely more gratified to perceive that he did not know more." Guthrie also wrote a book of lectures on " Operative Surgery " published in 1819. In this book squint is not even mentioned.

SIR CHARLES FERGUSSON FORBES.—Born March 22, 1779. He was a twelve months' pupil of Thomas Keate at St. George's Hospital in 1801. He was a Hospital Mate in 1798. Assistant-Surgeon, 2nd Battalion 1st Foot, 1799, Surgeon, 1st Foot, 1804, Staff Surgeon, 1808, Physician, Army Medical Service, 1811. Deputy Inspector of Hospitals, later Deputy Inspector-General, 1813. On half pay, 1814. Served in Holland, 1799, Egypt, 1801, Peninsular War. K.H. (Civil), 1837. Royal Licence to use K.C.H. instead of K.H., 1842. Knight Bachelor, 1844, Knight of the Crescent (2nd Class), M.D.Edin., 1808, F.R.C.P., 1841. Physician to the Duke of Londonderry. Physician to the Royal Westminster Ophthalmic

Hospital, which post he resigned in 1827 in consequence of a quarrel with Guthrie. He died in London in 1852, aged 73. His war service is quoted from Johnston's Roll of the Army Medical Service. In his obituary notice his war service is given as follows. Helder, 1799, Ferrol, 1800, Egypt, 1800-1801, West Indies, 1803, with Sir John Moore, in Galicia, 1808-9, Peninsular War, for which he had the medal with five clasps, Egypt, Corunna, Busaco, Badajos, and San Sebastian. Evidently it was just as easy in those days to see a large amount of the world at Government expense as it has been in more modern times.

Guthrie senior and Forbes had a dispute. The cause of this seems childish after these long years. The beginning of the trouble was the old one of one member of a staff going in and altering the treatment of a colleague during his absence. Forbes published two pamphlets giving an account of it. The trouble was referred to in the *Lancet* of May 26, 1827.

" Dr. Forbes examines about a third of 150 of these poor creatures, the rest are seen by Mr. Guthrie, *who does not arrive until half past twelve o'clock* and sometimes not at all and there does not appear to be any efficient House Surgeon to act in his absence. It is sad work." (The poor creatures, needless to say, are the patients attending the hospital). Sir Charles Forbes fought a duel with a certain Mr. Hale Thomson on grounds connected with this dispute. The pamphlet contains a certified account of the episode. The principals exchanged two shots each without effect, a third brace of pistols were then discharged equally without effect. The seconds then decided that this was enough and did not permit the affair to proceed any further, although a reconciliation had not been effected. Had they continued the duel after the seconds had left, this no doubt would have made them liable to a criminal charge of manslaughter.

CHARLES WILLIAM GARDINER GUTHRIE was born in 1816 and died in 1859 at the age of 42 years. He was the son of G. J. Guthrie. He was educated at Westminster School, and became a perpetual pupil at St. George's Hospital, entering under Robert Keate, in 1832. He was House Surgeon there 1837-8 and took his M.R.C.S. in the latter year. His F.R.C.S., dated from 1853. He was Surgeon to the Westminster Hospital and to the Royal Westminster Ophthalmic Hospital. He was apprenticed to his father at the Royal College of Surgeons in 1832. He introduced the operation of tenotomy for the cure of squint into England. His paper on " The Cure of Squinting " was published in 1841. This was the report laid before the Governors of the Royal Westminster Ophthalmic Hospital on the result of operations

performed between April 18, 1840 and February 18, 1841. It begins with a list of the Vice-Presidents and staff of the Hospital with the Duke of Wellington as President. Among the officials is Mr. G. F. Knox, of 7 Conduit Street, who is the Hospital Cupper and is also Cupper to the Westminster Hospital.

The operative cure of squinting seems to have been introduced into England at this period and performed extensively by Guthrie junior. His operative record is astounding. During 10 months he did 537 operations for convergent squint and 30 operations for diverging strabismus. He was the fashionable surgeon with a vengeance. Fifty-six squint operations a month, even if they were only tenotomies, was big business.

Dieffenbach, of Berlin, seems to have been the first to perform tenotomy for squint. One Mr. Pyper, a student who went over from England for study, had helped Dieffenbach with several of the operations and brought back an account of the method. With true enthusiasm he had a set of instruments made. Then the difficulty was to find a suitable and willing patient in order to make the first start. Guthrie's results were wonderful: "In no instance under my care has the sight of the eye operated on been lost or impaired." In his article hospital patients are mentioned by name and address, private patients only by initials.

The operation that he did was practically the same as the open method that we perform now, except that the division of the tendon was done with a small knife. Eight of his cases diverged afterwards, of which four had the opposing rectus divided with success. After-treatment consisted of a pad and bandage and bathing with cold water. When one reads of his success in operating with no particular precautions against dirt and sepsis, one wonders whether our vaunted methods of irrigation before operation are as essential as we suppose.

He seems a little uncertain in his language when describing cases of squint and one might infer that in some cases both eyes squinted at the same time. "In the great majority of cases of squinting, one eye only is implicated, whatever may have been the cause which gave rise to the complaint. In a smaller number both eyes have suffered although only one is manifestly affected, yet the second at times shows that it is not free from the infirmity which is so marked in the other, and the cure of the first will sometimes be followed by the recovery of the second."

HENRY HANCOCK.—Born in 1809 and died in 1880. M.R.C.S. in 1834 and F.R.C.S. in 1843, one of the original 300 Fellows of the College of Surgeons. He was born at Bread Street Hill, the son

of a City merchant. He went to Mr. Butters' school in Cheyne Walk and later to the Westminster Hospital. He acted there as House Surgeon and was appointed Demonstrator of Anatomy in 1835. He was elected Lecturer on Anatomy and Physiology at Charing Cross Hospital Medical School in 1836, and was appointed Assistant-Surgeon at Charing Cross Hospital in 1839, becoming Surgeon in 1840, and Consulting Surgeon in 1872. He acted as Ophthalmic Surgeon there in 1841. Hancock was House Surgeon to the Royal Westminster Ophthalmic Hospital in 1832, Assistant-Surgeon in 1840, full Surgeon in 1845, and Consulting Surgeon in 1870. He was a Member of the Council of the College of Surgeons from 1863 to 1880 and of the Court of Examiners 1870 to 1875; Chairman of the Midwifery Board in 1871; Vice-President in 1870 and 1871; President of the College in 1872 and Hunterian Orator in 1873. Arris and Gale Professor in 1866-7. As an oculist he invented an operation for dividing the ciliary muscle for the relief of glaucoma. He retired to Wiltshire and died of cancer of the stomach in 1880. I could not find any mention of eye work in any of his publications.

BURY IRWIN DASENT.—He became M.R.C.S. in 1838. He was never a Fellow of the College. (The Fellowship was only instituted in 1843.) He practised at 11 Pall Mall. He had been House Surgeon at the Westminster Hospital and was Assistant-Surgeon at the Royal Westminster Ophthalmic Hospital 1845-7. He was a Fellow of the Royal Medico-Chirurgical Society. In the Calendar of the Royal College of Surgeons in 1850 his address is given as St. Vincent, British West Indies.

EDWIN CANTON.—Born in 1817 and died in 1885. M.R.C.S. in 1839. F.R.C.S., 1845. He was a student of King's College Hospital and also of Charing Cross Hospital. He was Assistant-Surgeon at Charing Cross in 1841, Surgeon in 1855, and Consulting Surgeon in 1877. Surgeon to the Royal Westminster Ophthalmic Hospital 1854-5.

He wrote a book of 228 pages on *Arcus Senilis*. In this book all the s's in the text are printed with the old-fashioned long 's.' This makes the reading of the letterpress somewhat difficult.

JABEZ HOGG lived at 1 Bedford Square. He became M.R.C.S. in 1850. He was not a Fellow. He was Surgeon to the Royal Westminster Ophthalmic Hospital 1855-77 and was a student at Charing Cross Hospital. He was Ophthalmic Surgeon to the Royal Masonic Schools. He was President of the Medical Microscopic Society of London and Vice-President of the Medical Society. He was a prolific writer on many subjects, the chief one dealing with the microscope. He wrote a manual of Ophthalmoscopic Surgery in 1863. This book contains pictures in colours of various conditions of the fundus. It contains a good account of the direct

and indirect method of using the ophthalmoscope but gives no details of operative procedure.

HENRY POWER.—Born in 1828, died in 1911. M.R.C.S. in 1851, F.R.C.S. in 1854. London University had recently started and he won the prize for Chemistry in the Matriculation Examination; the Gold Medal in Anatomy and Physiology in the First M.B. in 1852, and the Medal and Scholarship in Surgery and Anatomy in the Final M.B. He was the son of John Francis Power, Captain in 35th Royal Sussex Regiment and Hannah his second wife, youngest daughter of Henry Simpson, Banker, of Whitby, Yorkshire. He was born at Nantes and was educated at several schools owing to his father being constantly on the move on account of his military duties. He was at Cheltenham College 1842-44. He was apprenticed to Thomas Lowe Wheeler, the son of Thomas Wheeler, the Apothecary to St. Bartholomew's Hospital. Thomas Lowe Wheeler died shortly afterwards and Power was transferred to his son, Thomas Rivington Wheeler. Power became a student at St. Bartholomew's in 1844. He had studied Latin, Greek and Botany and obtained the Galen and Linnaean Medals of the Society of Apothecaries in 1851.

In 1854 he married his first cousin, Ann Simpson, the daughter of Thomas Simpson, of Meadowfield, Whitby. He was appointed Demonstrator of Anatomy at Westminster Hospital and in 1855 was elected Assistant-Surgeon of the Royal Westminster Ophthalmic Hospital. He retired from this hospital in 1889 and was elected Consulting Surgeon. He was elected Assistant-Surgeon to the Westminster Hospital in 1857. From this appointment he retired in 1867 owing to his determination to devote himself entirely to ophthalmology. He was appointed Ophthalmic Surgeon to St. George's Hospital in 1867, retiring in 1870, when he was elected Ophthalmic Surgeon to St. Bartholomew's Hospital. He was also Ophthalmic Surgeon to St. Bartholomew's Hospital, Chatham. He was Vice-President of the Ophthalmological Society of the United Kingdom, 1882-5. Bowman Lecturer in 1887. President 1890-3. Member of the Council, Royal College of Surgeons, 1879-90. Vice-President in 1885. Arris and Gale Lecturer in 1882-3. Hunterian Professor in 1885-7. Bradshaw Lecturer in 1886. President of the Harveian Society in 1880-1.

From 1881 he occupied himself in rebuilding Bagdale Hall, Whitby, a house built in 1540 and which had been in possession of his wife's family. In 1898 while watching a storm on the pier his daughter and grandchild were swept away by a wave and drowned. One of his sons is Sir D'Arcy Power, K.B.E., F.R.C.S., Consulting Surgeon to St. Bartholomew's Hospital. He wrote

a book on Diseases of the Eyes, in 1868, which contains many good illustrations in colour. For obstructed nasal ducts he recommends the use of Bowman's probes. He strongly condemns the burning out of the lacrymal sac with zinc chloride in cases of obstruction. Apparently this latter procedure was still in common use with some surgeons. Probes for the nasal duct made from laminaria are mentioned, but these are not recommended as they were inclined to break and leave a piece of laminaria in the duct. Retinoscopy was unknown at that period but a good account is given of the treatment of astigmatism by cylindrical lenses after a subjective test.

JAMES ROUSE was born in Fulham in 1830, eldest son of Robert Rouse, Surgeon, of Walham Green. He entered St. George's Hospital as a perpetual pupil under the care of Caesar Hawkins. House Surgeon, 1850-1. M.R.C.S., 1851. F.R.C.S., 1863. Domestic Surgeon to Lord Ashburton in 1851. Members of the aristocracy seem to have given up this habit of appointing eminent specialists as their domestic medical advisers. He was Demonstrator of Anatomy and Surgical Registrar at St. George's Hospital, Assistant-Surgeon, 1867-75. Surgeon, 1875-95. Consulting Surgeon,1895. Died in Wilton Crescent in 1895 aged 65 years. He was Surgeon to the Royal Westminster Ophthalmic Hospital, 1859 to 1890, and Ophthalmic Surgeon to the Hospital of St. John and St. Elizabeth. He seems to have written no books or articles. When I was a student at St. George's he was still remembered for his large red hands and for the extreme delicacy of his touch when doing cataract operations.

GEORGE COWELL.—Born in 1836, died in 1927, aged 91 years. The son of George Kersey Cowell, M.R.C.S., of Ipswich. He was a pupil at the Birmingham General Hospital. He then entered St. George's Hospital as a post-graduate student in 1861. M.R.C.S., L.M. and L.S.A. in 1858. F.R.C.S. in 1867. House Surgeon to the West London Hospital. He was the virtual founder of the Victoria Hospital for Children, Tite Street, Chelsea, where he was Surgeon and also Ophthalmic Surgeon for 20 years. He was Surgeon to the Royal Westminster Ophthalmic Hospital from 1872 to 1896, and was attached to the Staff of the Westminster Hospital for 56 years. He was there Lecturer on Surgery and Ophthalmic Surgery for 20 years. He was Surgeon to the East London Hospital for Children and Lecturer on Surgery and Ophthalmology at the London School of Medicine for Women. A truly energetic man. . . .

He published a book of lectures on cataract in 1883. He quotes the results of 100 operations for cataract performed by himself. Three eyes were lost from panophthalmitis. Seven eyes had very

defective vision but the remaining 90 eyes operated on could be described as successes. Sepsis in those days did not affect the ophthalmic departments so severely as the general surgical wards. We moderns should be duly humble when we compare our results with our forebears.

NOTTIDGE CHARLES MACNAMARA.—Born in 1832, died in 1918. M.R.C.S. in 1854. F.R.C.S. in 1875. Hon. F.R.C.S.I., 1887. He was the son of Daniel MacNamara, Surgeon, of Uxbridge. He was a student of King's College Hospital and immediately after qualification he entered the Bengal Army as Assistant-Surgeon; was promoted Surgeon in 1866 and Surgeon-Major in 1873, and retired in 1876. He served in the Sonthal Rebellion 1855-6 and in the Mutiny in 1857. He held the Chair of Ophthalmic Surgery in Calcutta and was also Surgeon-Superintendent of the Mayo Hospital. At the age of 42 he retired from India and passed the F.R.C.S. Examination in 1875. In the same year he was appointed full Surgeon at the Westminster Hospital passing over the heads of three Assistant-Surgeons. This must have caused a disturbance in the medical world! He was also Surgeon to the Royal Westminster Ophthalmic Hospital. Both posts he held until he was 65 in 1897. He was President of the Section of Ophthalmology at the Annual Meeting of the British Medical Association in 1891. Member of the Council of the College of Surgeons from 1885 to 1901. Vice-President in 1893. Bradshaw Lecturer in 1895. Hunterian Orator in 1901. In 1887 he came to the help of J. Y. W. MacAlister in guaranteeing £23,000 for the purchase of 20 Hanover Square for the Royal Medico-Chirurgical Society. He married a daughter of the Hon. Henry Vincent Bayler and had a family of sons and daughters. He died at the age of 86.

HENRY EDWARD JULER.—Born in 1842, died in 1921. M.R.C.S. in 1867. F.R.C.S. in 1879. He was born in Suffolk, the son of Dr. H. C. Juler, a local practitioner of Huguenot descent. He was a student at St. Mary's Hospital. He was appointed Pathologist at the Royal Westminster Ophthalmic Hospital and with the help of his colleagues laid the foundation of the School of Ophthalmology there. He was Surgeon to the Hospital from 1881 to 1898. In 1884 he was assistant to Sir Anderson Critchett at St. Mary's Hospital and was responsible for the out-patient work and the teaching in ophthalmology.

When Sir Anderson Critchett retired in 1901 Juler became Senior Ophthalmic Surgeon to the hospital and the subordinate post in which he had worked for 20 years was formally recognized by the creation of an Assistant Ophthalmic Surgeoncy. He was also Ophthalmic Surgeon to the London Lock Hospital. He was President of the Harveian Society in 1899 and Vice-President of the Ophthalmological Society at the same time.

WILLIAM ADAMS FROST, M.R.C.S. 1874. L.R.C.P. in 1875. F.R.C.S. in 1878. He was a student at St. George's Hospital and also studied in Vienna. He was Surgeon to the Royal Westminster Ophthalmic Hospital from 1883 to 1906. Assistant Ophthalmic Surgeon at St. George's Hospital 1881 to 1893. Surgeon 1893 to 1906. Consulting Ophthalmic Surgeon, 1906. Ophthalmic Surgeon to the Victoria Hospital for Children. He was Librarian of the Ophthalmological Society for 20 years and Vice-President, 1906-9. Lecturer on Ophthalmic Surgery at St. George's Hospital Medical School.

His great work was his book " The Fundus Oculi," a book of magnificent illustrations of the fundus, published in 1896. He had a series of lantern slides made from these pictures and presented them to the Ophthalmological Society and to the Royal Westminster Ophthalmic Hospital where they are still in use. It used to be the privilege of the House Surgeon for the time being at the hospital to work the lantern for him for these lectures. I had the benefit of three courses of lectures on the *fundus oculi* during my period of office as House Surgeon. He is still with us and enjoys good health in retirement.

GUSTAVUS HARTRIDGE.—Born in 1850, died in 1923. M.R.C.S. in 1872. F.R.C.S. in 1874. The son of James Hartridge, of Yalding, Kent. He was educated at King's College Hospital. Assistant-Surgeon at the Central London Ophthalmic Hospital. Afterwards Surgeon, 1883-1909, to the Royal Westminster Ophthalmic Hospital and then Consulting Surgeon. He was Ophthalmic Surgeon to the Westminster Hospital. He was also Consulting Ophthalmic Surgeon to St. Bartholomew's Hospital, Rochester. He published a most successful book on Refraction which went through 16 English editions, besides American editions, and has had many imitators since.

BENJAMIN WAINEWRIGHT.—Born in 1853, died, at Pontresina, in 1910. M.B., C.M., Edin., 1880. M.R.C.S. in 1883. F.R.C.S. in 1883. He passed the last two examinations together. He studied and graduated at Edinburgh University where he was Demonstrator of Anatomy. He came to London and was appointed Assistant-Surgeon to the West London Hospital with charge of the Aural Department. He was Assistant-Surgeon at Charing Cross Hospital 1888-1891, and to the Royal Westminster Ophthalmic Hospital 1887-1894. He had private means and early resigned hospital work to devote himself to private ophthalmological practice. He was a keen mountaineer and a member of the Alpine Club.

HENRY WORK DODD.—Born in 1860, died in 1921. M.R.C.S. in 1881. F.R.C.S. in 1888. Born at Victoria, Vancouver Island, the son of Charles Dodd, of the Hudson Bay Company. He came

to England at the age of three years. He was educated at the Norwich Grammar School, and was a pupil of Dr. Gibson, of Norwich and attended the Norwich Hospital. Before coming to London he was Resident Surgical Dresser (a student's appointment) at the Norfolk and Norwich Hospital. He finished his medical education at St. Bartholomew's Hospital, of which he was elected a Governor in 1896. He was elected Surgical Registrar at the Royal Free Hospital in 1889 and Assistant-Surgeon in 1890. Was appointed Assistant Ophthalmic Surgeon in 1896 becoming full Ophthalmic Surgeon in 1900. He was Lecturer on Ophthalmic Medicine and Surgery at the London School of Medicine for Women. He became Consulting Ophthalmic Surgeon in 1913. He was Surgeon to the Royal Westminster Ophthalmic Hospital from 1890 to 1915, and also Ophthalmic Surgeon to the West End Hospital for Diseases of the Nervous system. He was Surgeon in earlier life to a ship of the Telegraph Construction Company voyaging to South America, South Africa and Cochin China. He was a keen Volunteer and retired as a Major R.A.M.C. (T.) He was a member of the Savage and Reform clubs, and an enthusiastic singer with a fine bass voice.

He wrote an article on Resection of the Superior Cervical Ganglion for Glaucoma and also devised a method of cauterizing the cornea in a horse-shoe-shaped manner for cases of conical corneae.

DONALD GUNN, M.R.C.S. in 1883. F.R.C.S. in 1889. He was a student at University College. He was Surgeon at the Royal Westminster Ophthalmic Hospital 1895-1902. Ophthalmic Surgeon, Seaman's Hospital, Greenwich and also the Hospital for Sick Children, Great Ormond Street. He was Demonstrator of Anatomy at the Westminster Hospital and also a Surgeon in the Navy. He retired owing to ill-health but is still alive in retirement.

JOHN GRIFFITH.—Born in 1866, died in 1901. M.R.C.S. in 1889. F.R.C.S., 1894. Born at Aston, Oxfordshire, the son of the Rev. George Sandham Griffith. He was educated at Royse's School, Abingdon and under Dr. Grove, of St. Ives, Huntingdon. He was a student at St. Mary's Hospital. He was there Senior Clinical Ophthalmic Assistant and held this post until his death. He was Assistant-Surgeon and then full Surgeon at the Royal Westminster Ophthalmic Hospital from 1895 to 1901, having previously held the post of Pathologist. During the last five years of his life he assisted Sir Anderson Critchett and H. E. Juler in their private practices. He died of phthisis. Earlier he had been Assistant-Demonstrator of Anatomy and Assistant-Pathologist and Curator at St. Mary's Hospital.

FREDERICK BASS.—Born in 1852, died in 1899. M.R.C.S. in 1882. F.R.C.S. in 1885. He was educated at St. Bartholomew's

Hospital and in Vienna. He was in general practice for some years at Tufnell Park, N. He was at one time Assistant Aural Surgeon to the Dispensary and Senior Assistant Demonstrator of Anatomy at the School of Medicine, Newcastle-on-Tyne. He settled in Upper Wimpole Street and was an Assistant-Surgeon at the Royal Westminster Ophthalmic Hospital for some months.

This account brings me down to modern times, to colleagues who are enjoying the fruits of their labours. One must leave it to a future historian to continue the history.

The list of references includes all ophthalmic work published by members of the Staff of the Royal Westminster Ophthalmic Hospital in the past. Many of them have written also on surgery or general subjects, but these I have not mentioned as not being of interest to readers.

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THE OPHTHALMOSCOPIC EVIDENCE OF DEATH

BY

N. PINES

LONDON

IT is not easy to be certain of death in a person immediately after the event. The usual advice is:—

1. To listen carefully with the stethoscope for at least five minutes all over the chest, especially in the region of the heart, for any sound of heart-beats.

2. Tie a finger with a ligature, being careful not to stop the circulation altogether and watch for the change and possible swelling of the peripheral part (Magnus's sign.)

3. Inject fluorescein and, if the circulation still persists, the neighbouring skin will stain deep yellow.

There are many other good suggestions to be found in text-books the best being to cut a small artery and to watch for a jerky flow of blood. In the fundi the usually described signs immediately after death are:—

(*a*) The change of the usual yellowish-red colour to a yellowish-white;

(*b*) The emptiness of the vessels on the disc and near it in contrast with peripheral vessels still filled with blood;

(*c*) Pneumatosis (bubbles of air) in the veins of the retina.

During the last few years I have had several opportunities of seeing cases immediately or very soon after death. In the majority of these cases I was familiar with the appearance of the fundi during life, a few I had seen shortly before and again after death. The ophthalmoscopic examination of the eye after death is exceedingly simple.—The pupil is dilated, the media are clear. By gentle pressure on the eye-ball immediately after the circulation has ceased one can make the veins and then the arteries collapse on the retina near the disc, but, of course, in contrast to the living eye, no venous or arterial pulse appears. The same applies to the disc. And in my opinion it is an infallible and easily elicited sign of death.

In my experience, in persons *not suffering from aortic regurgitation*, within one or two minutes after death the disc becomes pale, but the retina remains rosy, the arteries are not changed, but the veins are somehow more flat. Arterio-venous compression is still preserved on the retina and the disc. Later, the disc grows dead-white, the retina more rosy; the arteries become thinner and the

veins more blackish, but not tortuous (in the living increased blackness is usually accompanied by an increase in tortuosity) the vessels on the disc are nearly empty, but still visible. After that (15-20 minutes) the blood column in the arteries begins to break up, first of all on the retina near the disc and at the points of arterio-venous compression. The retina is paler, but still rosy. Still later (1-2 hours) the retina is white, the media become more hazy, but some of the large arteries are still visible on the retina as slightly dark-red lines, interrupted in places. The same applies to the veins, but they are less visible. I never saw early bubbles of air in the veins, contrary to the statement in many text-books.

The explanation of all these phenomena seems to me to be in the loss of muscular tonus of the arteries and of the heart. Supposing that the body is lying in the usual position—with the head and shoulders slightly raised on a pillow—the blood will collect in the venous cerebral sinuses, carotids, aorta and heart. The capillaries of the disc, supplied from behind the lamina cribrosa (partly perhaps), may be less collapsible because of their strong perivascular membrane and containing little blood—will be emptied first. The retinal vessels have to drain more blood (from all the retina) and the lamina cribrosa will not allow a very free outflow—they will be emptied much more slowly. But the main factor will be the state of the aortic valve of the heart. Even in a normal person after death this will be partly open and the blood will trickle from the aorta and collect in the ventricle. The post-mortem state of the aortic valve together with the degree of the rigidity of the large vessles will, in my opinion, decide the quickness with which changes in the fundi occur. Perhaps the following fact will verify to some degree all the foregoing theories.

I saw a boy, aged 19 years, with an advanced aortic insufficiency (endocarditis rheumatica) 1-2 hours before his death and then again approximately 10 minutes after his respiration ceased. His retina was completely white with some rosy thick arteries still visible in places. The cornea was hazy and altogether his fundi 10-15 minutes after death presented the appearance, usually only seen in 1-2 hours after death in a person dying from any other condition.

RAPID INTERSTITIAL DEGENERATION OF THE CORNEA FOLLOWING CHOROIDAL HAEMORRHAGE

BY

E. A. SEALE

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THE literature of degenerative conditions of the cornea is scanty—so much so, that I am unable to classify the following case to my satisfaction. Mr. J. H. Doggart's article, " Marginal Degeneration of the Cornea " in the October number of *The British Journal of Ophthalmology*, 1930, has been helpful.

This report is of a case of very rapid interstitial corneal degeneration associated with diabetes and carbuncles.

On July 4 of last year, Dr. Dru Drury asked me to see Mrs. T., aged 51 years, in hospital. He had noticed a sudden affection of her right eye. I found her in bed; dull and listless and sweating freely. She was having insulin and the usual dietetic restrictions. The lids of the right eye were swollen a little: the conjunctiva chemotic: the cornea a trifle oedematous and ciliary congestion marked. Anterior chamber shallow: pupil enlarged and tension high. Vision equal to hand movements. The other eye seemed quite normal. Surrounding the cornea like a complete, magnified arcus senilis, and deeply situated, was a ring of greyish-yellow colour. No pain present or complained of previously. Several large carbuncles were discharging freely, one being on the right side of her neck. Carbuncles had troubled her for four months.

An acute glaucomatous condition was evident, for which she was ordered eserine frequently and hot fomentations.

Next day the corneal ring had extended centrally.

July 6, the degenerative process had extended over the entire cornea, and a moderate amount of Meibomian secretion noticed. Tension less. Thinking that a long restricted diet might be a factor in a dystrophic degeneration, I advised cod liver oil, lettuce and fruit juice.

No marked changes between this date and July 10, when the deep corneal layers looked yellower and seemingly liquid and movable. Tension still above normal though not high.

July 12.—Slight right eye pain. Cornea quite opaque.

July 13.—Eye painful and tender—pain extending to frontal and nasal regions—iritic in character. Eserine now stopped entirely and atropine ordered. Next day, pain quite gone and tension normal. Stopped atropine. Ciliary congestion also much diminished.

July 17.—Eye soft: less congestion. Cornea becoming ectatic centrally but clearer at the limbus. The temperature was irregular

throughout, sometimes 101° and then becoming almost normal for a time. I did not see her again until July 26, when I found a great change for the worse. Dr. Drury expected her death some days previously, when she had a sudden collapse.

July 29.—She died. The right eye was excised while the body was still warm. The cornea was so thin centrally that it ruptured during the very careful removal.

Mr. D. J. Wood, of Capetown, very kindly examined and reported on the specimen. He said the cornea was " concave inwards and central part gone. The corneal layers were much separated by fluid and had hardly anything in the nature of a cell exudate among them. There was a blood detachment of the choroid with wide separation of retina. No satisfactory section of the cornea obtainable."

It is unfortunate that there is no information as to the appearance of the corneal ring in relation to the incidence of the glaucoma. One may reasonably suggest that the sudden choroidal haemorrhage, raising tension and blocking the angle, so affected the adjacent tissues as to cause their destruction—aided by a toxin-laden aqueous.

Central necrosis of the cornea in severe infections, *e.g.*, panophthalmitis, has been recorded, and is of peculiar interest, says Friedenwald[1]. In these cases " the pus cells which then wander into the cornea, are unable to penetrate the necrotic zone. They form, therefore, an annular infiltrate of increasing density. . . finally ulcerating and giving rise to a circular trough (ring abscess of the cornea.)"

Collins and Mayou[2] also describe an annular infiltration which may occur in severe intra-ocular infections and lead to ring abscess.

Fuchs[3], among the various corneal dystrophies classed and described, has no case like that of my patient. Parsons' " Pathology of the Eye " being unfortunately out of print, was not available for reference, but in his handbook[4] a " Keratitis marginalis profunda " is described occurring as a rarity in old people which presents some points of resemblance to the condition I have described.

Points of interest in this case, I consider, are the rapidity of onset and course: painlessness in the presence of very high intra-ocular tension and the immunity of the corneal endo- and epithelium—the latter gave a bright reflex throughout.

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THE BLINDNESS OF TOBIT

BY

ERNEST THOMSON AND R. R. JAMES

IT may well be that readers of this Journal have made no great study of the story of Tobit, his son Tobias and the (reputed) angel Raphael. The story as a whole should, in words familiar to us, " be read in the original," but some speculations regarding the cause and the cure of the blindness of Tobit may form a contrast to the rigid facts of the biochemist.

Tobit lived in Nineveh of Assyria: he was of the captivity and was devoted to his own people. A large-hearted man, one of the ways in which he expressed this devotion was in the pious burial of any one of his people whom he might find slaughtered and " cast out upon the walls " by Enemessar the king. It happened on a day, when he had buried a compatriot that, feeling himself unclean, he preferred to sleep out instead of returning to his house. ". . . and slept by the wall of my courtyard, being polluted; and my face was uncovered: and I knew not that there were sparrows in the wall; and, mine eyes being open, the sparrows muted warm dung into mine eyes; and I went to the physicians and they helped me not. . . ."

At this same time it became necessary for Tobias, the son of Tobit, to travel to Rages of Media. The object of the journey was financial and does not seem to have had anything to do, in the mind of Tobias, with his father's blindness. Incidentally, Tobias obtained a wife: but that is " another story " and a very strange one. With Tobias went one, Raphael by name, who declared himself to be an angel sent to help Tobias in various ways. In the course of the journey of Tobias and Raphael, they halted beside the River Tigris when " a fish leaped out of the river and would have swallowed up the young man." Instructed, however, by Raphael, Tobias flung the fish to land and removed the heart, liver and gall and " put them up safely." Tobias, very naturally enquired why this should be done. Raphael the angel replied " Touching the heart and the liver, if a devil or an evil spirit trouble any, we must make a smoke thereof before the man or the woman, and the party shall be no more vexed. But as for the gall, it is good to anoint a man that hath white films in his eyes and he shall be healed."

Eventually Tobias and Raphael (and also Tobias's new wife *and* his dog) returned to the house of Tobit. It must have been months at the least before Tobias and the angel returned because, at a rough estimate, the journey can hardly have been less than 400-600 miles. As soon as his father stumbled out to meet him Tobias

" strake the gall on his father's eyes . . . but when his eyes began to smart, he rubbed them; and the white films scaled away from the corners of his eyes; and he saw his son . . ." Bland Sutton (*Selected Lectures and Essays, 4th Edit.*, 1920), thought that the blindness of Tobit was due to cataract and that when Tobit rubbed his eyes he dislocated the lenses. This, of course, is a possible explanation. Bland Sutton considered that Tobit was aged 58 years when he became blind and that the cure took place eight years later. But there does not seem to be any real proof in the story as told in the Apocrypha that the journey was so long as all that; the straightforward account of the journey and the happenings in Media almost negative it, in spite of the statement quoted by Bland Sutton, which is made near the end of the book of Tobit and was quite probably written by a different scribe. The same scribe (apparently) says that Tobit was " a hundred and eight and fifty years old " when he died. Yet his wife was still living and so was Tobias his son. It is more than probable that these chronological statements are not to be trusted at all.

If we take the words of the text, the expression " white films " does not seem a good description of ordinary cataract behind ordinary pupils. Further, it is plain that something happened suddenly to Tobit's eyes and caused him to seek treatment. Whether the vulgar behaviour of the sparrows in blocking up the eyes had anything to do with the attack seems very doubtful. It is much more likely that when attending to his dead fellow countryman some septic or pathological secretion was accidentally introduced by Tobit himself and set up a violent inflammation which caused the eyes to be closed up. This is strongly supported by what Raphael said to Tobias on their return journey; " I know, Tobias, that thy father will open his eyes " (after the treatment with gall.) Tobit's eyes must, therefore, have been closed when they left him. People with ordinary cataract do not have their eyes suddenly closed up. Lastly, there is the previously quoted statement, " and the white films scaled away from the corners of his eyes."

It seems almost impossible to accept as a cause of the blindness the explanation about the sparrows. The sparrows would hardly be likely to cause double blindness, even supposing that Tobit had lagophthalmos and had his eyes open in sleep. The " cure " is more interesting. If one assumes that the " white films " were nothing else than secretion in an acute and perhaps afterwards a subacute or chronic ophthalmia (?trachoma) what influence might the gall of a fish have upon the disease? True, the cure reads as if it had been immediate—as would be the case with dislocation of a cataract—but one cannot trust old writings, *e.g.*, in the Bible, to

be chronologically accurate. There is a distinct and perhaps interesting possibility in cholesterin: it is an active substance in various ways. It is a constituent of gallstones, even up to 90 per cent. or more (*Extra Pharmacopoeia*, Vol. 1, p. 112, Eighth Ed.) Cholesterin is an unsaturated secondary alcohol having the molecular formula $C_{27}H_{46}O$. It occurs in the organism both in the "free" *i.e.*, alcoholic, condition, and as esters of the fatty acids. We are not prepared to state whether or not this active substance exists in any special form in fish gall, but the investigation may appropriately be left to the chemists, one might say to the biochemists.

One more remark and this disquisition is finished. What other fish than a salmon could this have been which with "vaulting ambition which o'erleaps itself" falls on the rocks at the side of the leap and is captured by the hands of a young man camped on a rugged portion of the bank of the Tigris? A very human story this. Only the essentials of one part of it have been here referred to.

IODINE IN THE TREATMENT OF TRACHOMA

BY

J. NEUMANN

FROM THE OPHTHALMIC CLINIC OF THE UNIVERSITY OF WARSAW.
DIRECTOR: W. MELANOWSKI

THE cure of trachoma is a task which frequently affords serious difficulties. In cases of advanced trachoma, especially when complicated by pannus, ulcers and infiltrates of the cornea, our ordinary methods of treatment often fail. In such cases copper sulphate does not always relieve, it may aggravate the condition; and the long continued use of silver nitrate, though most useful as long as muco-purulent secretion is excessive, usually leads to argyrosis. It is in such cases that I have found the application of iodine successful. I was led to try this drug in a desperate case of trachoma (Case I) and was so much impressed with the favourable result that I have given it a repeated trial in bad cases since, always with good results. This paper concerns 15 cases of trachoma treated with iodine.

Case I

A male clerk, aged 20 years, consulted me in June, 1926. His left eye had been "sore" since May, 1924; he had undergone treatment at the hands of several physicians and peritomy had

been twice performed on the left eye. Examination showed that the right eye was normal. In the left eye the conjunctiva of the tarsus and fornix was thickened and much scarred; the bulbar conjunctiva was hyperaemic, marked ciliary injection was present and the cornea was entirely covered with pannus, that in the upper part being fleshy. New vessels invaded the cornea on all sides, infiltrates of the size of a pin's head as well as ulcers, measuring 1 by 2 mm. were present in the cornea. The anterior chamber was deep; the pupil reacted badly to light, much photophobia was present and the vision was reduced to counting fingers at a range of 20 cm.

He was treated with atropine and massage with an ointment containing atropine, scopolamine and cocaine. When seen next day the pupil was dilated but the condition was not otherwise improved. This treatment was continued for four days without improvement and on June 14 I smeared the fornix with iodine. On June 16 the photophobia was rather less and the patient could open his eye with difficulty. Massage of the lids was repeated. On June 18 I smeared the upper fornix and the upper part of the tarsal conjunctiva with iodine, and by the 21st there was considerable improvement; the eye was paler, the ulcers were healing and the infiltration was less marked. Two days later the application of iodine was repeated and this caused pain lasting three hours, but by the 25th he could open his eye and felt well, the infiltrates were gone and the ulcers healing satisfactorily. On June 28 he had some pain in the eye with recrudescence of infiltration; the application of iodine was repeated. Photophobia persisted till July 2 but by July 5 the eye was white, the infiltrates gone. The iodine was repeated from July 5 to 12 and by the 15th the man was back at work. He could open the eye freely, the fornix and tarsal conjunctiva were smooth and heavily scarred and the pannus complete. The right eye was normal with full visual acuity and the vision in the affected eye had improved to being able to count fingers at 2·5 metres.

Case II

A labourer (female), aged 30 years, consulted me in June, 1926, with well-marked trachoma of both eyes; this had existed for several years and a diagnosis of trachoma (stages 2 and 3) had been made in the previous year, with pannus, more marked in the left eye. On examination the conjunctiva of the right eye showed papillary hypertrophy and scarring, there were some recent granules in the fornix, but the cornea was clear and vision normal. The left eye was kept closed, lacrimation and hyperaemia were marked, the state of the conjunctiva was similar to, but worse than,

that of the right side, the upper part of the cornea was covered with pannus and a central ulcer 2 by 3 mm. in size was present; the base and edges of the ulcer were much infiltrated. Vision was reduced to finger counting at 3 metres. For three weeks I treated her with atropine and massage with very little improvement. On June 24 I applied iodine to the fornix and upper tarsal conjunctiva, the right eye being treated with copper sulphate. Next day the eye was quieter and the ulcer better; the iodine was repeated. On July 1 the eye was much better and the iodine was repeated and by July 5 the conjunctiva was smooth, the photophobia had disappeared and the ulcer was healing. Iodine was repeated. The patient went back to work on July 15, with smooth, scarred conjunctivae, pannus in the left eye and a facet at the site of the ulcer. Vision had improved to 5/36.

Case III

A labourer (female), aged 28 years, consulted me on June 7, 1926, complaining of sore eyes. She had had trachoma for three years with aggravation of symptoms for eight weeks. She could not open her eyes and had to be led about. On examination, marked blepharospasm was present; the conjunctival surface was uneven with papillary hypertrophy and fresh granules. The eyes were much congested, the whole cornea being covered with pannus, while numerous infiltrates and ulcers were present. She was treated with atropine and massage for two weeks without much improvement. On June 24 I smeared the upper fornix and tarsal conjunctiva of the right eye with iodine. Massage of the left eye was continued. By June 29 the right eye was much less photophobic; on this date I applied the iodine to the left eye and massage to the right. By July 15 a considerable improvement had taken place; the woman could open her eyes and could find her way about without assistance. The eyes were white, the conjunctiva of the tarsi smooth except at the outer and inner angles of the upper lid, the corneal infiltrates and ulcers were cured and the pannus thinner than on her first visit. Vision with the right eye was finger-counting at a range of 1 metre.

Case IV

A male clerk, aged 59 years, with a history of sore eyes of several years duration consulted me on June 16, 1926. I found papillary hypertrophy of the upper fornices of each eye; the tarsal conjunctiva being scarred but smooth. Vision, 5/10. I massaged the conjunctivae on the two days succeeding his visit, and on June 19 I treated the right eye with iodine. During the next week he was

given massage and the iodine treatment on alternate days and by June 28 the fornices were much smoother. During the next three weeks the conjunctivae were massaged three to four times a week with marked improvement.

Case V

A male porter, aged 18 years, came to the Ophthalmic Clinic of the University of Warsaw on July 20, 1926, complaining of defective sight in the right eye for the past month. On examination, photophobia was present with papillary hypertrophy and scarring of the right conjunctiva; the cornea was covered with pannus, the eye was very congested and infiltrations were present. Vision was reduced to counting fingers at a distance of 10 cm. in the right eye. Vision in the left eye was 1/20, myopic astigmatism being present. The iodine treatment was started at once. Improvement was immediate and by July 24 the right eye was white, the infiltrations having cleared up; iodine was continued in the right eye; the left, also trachomatous, was treated with copper sulphate. By July 30 the vision in the right eye had improved to finger counting at 2 metres. The man then ceased attending. He returned with a relapse on September 11. During the next ten days he was treated with iodine and massage at the end of which time the eye was white, the conjunctiva smooth but hyperaemic, the corneal infiltrates had cleared and vision had improved to finger counting at 3 metres. During the following three months he was treated with massage and tannic acid; there was no further infiltration of the cornea.

There being a strong family resemblance among all cases of long standing trachoma it is permissible to consider cases 6 to 12 together. Each was a case of long standing, the youngest patient being aged 38 years and the oldest 57 years.

All attended the clinic of the University of Warsaw. All presented evident signs of trachoma and in most cases the corneae were covered with pannus and either infiltrated or ulcerated. Treatment with iodine was used in each case with considerable improvement. Cases 12, 13 and 14 occurred in young patients and the last of my cases reported here was a long standing case of trachoma in a woman aged 52 years; all did well.

During the past four and a half years I have treated 58 cases of trachoma with iodine; all these cases have been complicated with pannus and corneal ulcers or infiltrates. It is not necessary to describe all these cases, but I have been struck with the improvement which has followed the use of this treatment. In all cases

infiltrates in the cornea cleared with surprising rapidity and ulcers healed; the infiltrates often cleared in 24 hours. Iodine has also a favourable influence in reducing the papillary hypertrophy of the conjunctiva and purulent secretion is markedly lessened. I have also used iodine in uncomplicated cases of trachoma with gross papillary hypertrophy, in 100 cases during the past four years always with a good result.

In cases of trachoma I usually smear the conjunctiva with iodine once a week, or once a fortnight, applying in the meantime copper sulphate stick or massage of the conjunctiva by the method of Likiernik; *i.e.*, massage with a glass rod with globular end measuring 8 to 10 mm. in diameter. The safety of iodine application is proved by the fact that I have had no cases of artificial injury of the cornea during the treatment.

The technique of smearing the conjunctiva with iodine is simple. I wind a wisp of cotton-wool round the end of a glass rod and dip it in 10 per cent. tincture of iodine; I take on the end of another glass rod plenty of xeroform or some other unirritating ointment. After having carefully everted the eyelids and protected the cornea, I smear the iodine over the tarsal conjunctiva and that of the fornix until the cotton-wool holding the iodine is dry; if necessary I also smear the lower fornix. I then remove excess of iodine with dry cotton-wool, smear the whole area treated with the previously prepared ointment and replace the lids.

Occasionally patients complain of the after-effects; in some cases burning feeling is experienced and at times, pain, which may be severe. Should this occur cocaine may be instilled. In some cases patients complained of pain lasting several hours; other cases spoke only of a burning sensation, and in one case the patient went back to work immediately after the treatment and worked for the rest of the day. The immediate result of smearing the conjunctiva with iodine is to produce an inflammatory reaction; this usually reaches its climax on the next day. The secretion from the eye is now plentiful enough; the conjunctiva is whitish-grey. Two days later the necrotic conjunctival epithelium has been cast off and is quickly regenerated. The treatment may be repeated when the inflammatory reaction is over, usually by the fourth day, but no hard and fast rules for this can be laid down, each case must be treated on its individual merits. To summarize: My indications for the use of iodine are:—1. Trachomatous complications on the cornea. 2. Papillary hypertrophy, without corneal complications. 3. Purulent secretion from the conjunctiva in cases of trachoma which is not controlled by the use of silver nitrate. 4. Purulent secretion when argyrosis is already present. In corneal complications the iodine acts by destroying the papillary hypertrophy. Secretion is locked up in the spaces between the papillae and

conditions are then excellent for the development of micro-organisms. The destruction of the hypertrophied papillae removes the mechanical and toxic causes of corneal irritation. Iodine is an excellent means of disinfecting the skin prior to surgical operations; and bacteriological investigations have shown that iodine kills the micro-organisms on the skin and although those in the hair follicles and ducts of the sweat glands are not killed outright, they are imprisoned by the operation of the iodine which causes a slight spasm effect whereby the skin becomes as if tanned and the orifices of the follicles and ducts are thereby closed. The same effects doubtless take place in the conjunctiva; thus iodine destroys the hypertrophy of the papillae, kills the surface organisms and imprisons those which are in the depth of the membrane. I do not claim that iodine is a specific for trachoma, but if we are concerned with the rapid removal of ulceration and corneal infiltration together with hypertrophy of the lid papillae, then iodine has shown itself to be a good medicament. I have found the massage of the surface of the lid by the method of Likiernik to be useful in cases of complicated trachoma, while in uncomplicated cases I have used the copper stick and also chaulmoogra oil with good results. The combination of massage with the iodine treatment usually gives very good results.

I have found but few instances in the literature of the use of iodine in trachoma. The first to introduce this method was Nieznamoff. He used iodine dissolved in white vaseline oil. He used a 0·5 to 1 per cent. solution in complicated cases; and he treated dry cases of trachoma without corneal complications with stronger solutions; *i.e.*, 2 to 5 per cent. The weak solutions produced only a slight burning sensation, but those above 1·5 per cent. caused great irritation, which, however, quickly diminished. This irritation was largely the result of the ether added to the solution in order to keep it in a concentration above 1·5 per cent. Neither weak nor strong solutions had any deleterious effect upon the cornea. In 1897, Nieznamoff published a second paper, recommending a 2 to 3 per cent. solution of iodine. Simi, in 1896, applied iodine in white vaseline as a collyrium. One case bore it well and a good result was obtained, but in two cases severe pain resulted and this surgeon therefore abandoned this method of treatment. Eversbusch, in 1896, recommended the application of iodine in cases of trachomatous pannus. He smeared it with a thin brush upon the ocular conjunctiva at a distance of 2 to 3 mm. from the limbus over the sites of the large vessels running to the pannus. Aristoff, in 1898, and Mochulsky, in the same year obtained fair results in severe cases of trachoma by using iodine in 1 to 3 per cent. solution in white vaseline oil. Polansky, on the other hand, had bad results, the condition in his

hands being even aggravated. Schiele, in 1901, used iodic acid, glicin and iodoglicin and considered iodic acid to be a useful method of treatment. Simi, in the same year, reported good results with iodic acid. Morgano, in 1902, used iodvasogen and obtained good results, the pannus being cleared up. Maretti, in 1924, after having expressed the granules, smeared the bleeding spots with 10 per cent. iodine and also touched corneal ulcers with a like strength, obtaining good results. Theodor Ballaban, in the same year, scraped off the pannus with a sharp spoon and smeared the denuded area with iodine. He repeated the application of iodine every 2 to 5 days and obtained rapid clearing of the pannus.

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OXFORD OPHTHALMOLOGICAL CONGRESS

XXIst ANNUAL MEETING

THE XXIst Annual Congress was held at Oxford on July 9, 10, and 11. The Deputy Master inaugurating the first meeting alluded to the unavoidable absence of the Master through illness and suggested that the Congress should send a telegram expressing its regrets at the absence of Mr. Cridland. Mr. PATON in opening the symposium on the diagnosis of intracranial new growths reminded the members that the subject was a weighty one, and that it occupied no less than nine volumes of Willbrand and Saenger. In his opinion, papilloedema was the most valuable sign but it was essential that the observer should be well trained,

because it was not difficult to mistake pseudo-oedema for real oedema or to miss a relatively low grade of oedema altogether. Cases illustrative of these pitfalls were briefly outlined. Bailliart's sign—raising of the retinal arterial pressure was alluded to as being valuable, particularly as it was present before the development of oedema. The opener then proceeded to discuss the histology of papilloedema and to explain why the blurring appeared first at the upper and lower margins of the disc. He gave a valuable statement as to the sites of the tumour formation most likely to cause oedema and gave the relationship of the various ophthalmoplegic syndromes to the locality of the causative lesion. Nystagmus was briefly considered and it was pointed out that the absence of physiological nystagmus might be just as important as the occurrence of the pathological variety.

SIR PERCY SARGENT opened his remarks with a plea for early diagnosis. If the physician in charge of a case waited for the establishment of the classical triad of headache, vomiting and papilloedema it might well be too late to do anything by surgery, in fact students should be taught to regard this as a warning of impending death rather than as significant of an operable tumour. Some sort of classification is necessary, the best being a combination of the topographical and histological ones. Of vital importance, was the first symptom experienced by the patient, since this might show the site of origin of the tumour. Subsequent progress was often of importance in indicating the histological character of the growth. In the relatively non-malignant endothelioma, the progression of symptoms was orderly and uniform, whereas in glioma the advance was much less uniform owing to the occurrence of sudden changes such as haemorrhage, oedema and degenerations. The examination of the cerebro-spinal fluid might also help in the diagnosis of the type of tumour. Mr. TRAQUAIR emphasized the fact that while in many cases, perimetry may add only one feature to an otherwise complete clinical picture, in others it may furnish the only sign of the disease. The great point in perimetry was to do it, and to do it properly. The defect should be examined with regard to its position, size, shape, and intensity, uniformity, margins, quality, and behaviour. To do this adequately, meant using objects of various sizes and sometimes colours. Thus the fields of one case showed no abnormality until 1/2,000 test object was used, while in another there was no field loss appreciable with any size of object but a 10/2,000 red object showed definite hemianopia. An interesting series of fields was shown and their interpretation explained. Particular reference was made to the field changes in temporal lobe tumours and it was shown how these could be explained better, as a result of pressure on the optic tract than as a

result of interference with the geniculo-calcarine pathway. Mr. NORMAN DOTT likened a cerebral tumour to a prisoner in the dock and the various signs to the witnesses. Of these witnesses, the most reliable was perimetry. Evidence of this was afforded by a case in which the sole manifestation of disease was the presence of field changes indicating a chiasmal lesion, these gradually progressed and operation disclosed the presence of a soft cystic adenoma of the pituitary in spite of negative X-ray findings and the absence of any disc changes. Several other interesting cases were described in which perimetry played a large part in the diagnosis.

Prof. Dr. SCHÜLLER spoke on the X-ray findings. These can be divided into five classes: (1) Negative, usually associated with gliomata, suprasellar tumours and extra-cerebral ones in the posterior fossa. (2) Evidence of increased intracranial pressure. (3) Direct localizing signs, owing to calcification or ossification of the tumour. (4) Indirect localizing signs. (*a*) Hyperostosis of the skull. (*b*) Thinning of the skull by pressure of the tumours. (*c*) Erosion by infiltration. (*d*) The presence of enlarged venous channels. (5) Signs apparent only after injection of air or ascending lipiodol. A very fine series of radiographs was shown, to demonstrate these various methods of localization.

In the afternoon Prof. ELLIOT SMITH delivered an address on "The Evolution of the Instruments of Vision." Primitive unicellular organisms react to the stimulus of light, and the earliest form of eye is merely a specialized portion of skin with some pigment deposit behind it. Evolution of the eye is relatively rapid and a complicated type can be found in quite lowly animals. In primitive vertebrates, the optic tracts are connected only with the mid-brain, and have no connection with the cerebral hemispheres. The progress of evolution is largely bound up with the acquirement of cerebral connections for the visual tracts and the acquirement of more precise control over ocular movements. When this is achieved, the maculae develop, thus giving much finer degrees of visual acuity and ability to control the movements of the body by conscious visual, rather than by reflex vestibular impulses. Such control allows the assumption of the erect attitude and liberation of the hands from purposes of locomotion. All this entails great changes, and development in the cerebrum, and the lecturer showed in a fascinating manner how one factor reacted on another to result in the production of homo sapiens.

At the conclusion of the address, Mr. PATON moved a vote of thanks to Prof. ELLIOT SMITH, which was carried by acclamation.

The discussion on the diagnosis of intracranial new growths was then resumed, and Prof. Dr. SCHULLER showed the remainder of

his slides. Prof. EMIL DE GROSZ emphasized the need of co-operation between various specialities in the diagnosis of cerebral tumours, and Dr. Giri described an obscure case of hemianopia complicated by glaucoma. Dr. TYSSON described a case of acromegaly complicated by the presence of calcified carotid arteries and Dr. PARKER, his experiments in the production of papill-oedema. In these, one eye of an animal was trephined, and the intracranial pressure artificially raised by the introduction of some substance into the skull. In every instance the resulting papill-oedema appeared first in the eye with the lower tension. There are fallacies in the clinical application of this work, which Dr. PARKER explained. Mr. STAMMUS alluded to the need of employing small objects in perimetry and Mr. PATON replied shortly. The Congress then adjoined to a very pleasant garden party given at Magdalen College through the kindness of Dr. H. H. MACKEITH, Dean of the Medical School.

The Annual Dinner was held in the Hall of Keble College. There was a large attendance and the culinary efforts of the college were much appreciated as were also the speeches after dinner. On Friday morning Dr. BAILLIART delivered an address on tonometry. He pointed out that Bowman was the first observer to take note of the intra-ocular pressure and that tonometry, therefore, dates from him. There are now no fewer than 30 different types of instrument but none of them can give a strictly accurate measurement of the intra-ocular pressure, since the diameter, convexity and elasticity of the cornea vary from patient to patient. Also the reaction of the eye to the pressure of the tonometer is variable, and curves illustrating this were shown. There are three types of cases, (1) where the second and subsequent readings are lower than the first (2) where they are the same (3) where they are higher. The last group is important, since they are potentially glaucomatous. Dr. BAILLIART concluded by emphasizing the fallaciousness of digital estimation of the intra-ocular pressure. The paper was then discussed by Dr. TRAQUAIR, Col. WRIGHT, Dr. PARKER, and Mr. HARRISON BUTLER.

After the Annual Meeting had been held, Mr. ADAMS gave the Doyne Memorial Lecture. The title was " An Ophthalmological Mélange " and the mélange proved to be an extremely interesting one, composed of various cases which the lecturer had had under his care. The first to be dealt with were spasm of accommodation, and spasm of convergence. Progressive myopia was then discussed. Calcium deficiency may be a factor in this condition, but it is not the only one, since cases were described in which the myopia progressed in spite of administration of this substance. There is probably some relationship with growth of the body as a whole and myopia shows a tendency to increase when this is taking

place. Three cases of Parinaud's conjunctivitis were described, one was definitely tuberculous, a second was probably tuberculous, and the third was due to the pneumobacillus of Friedlander. Conical cornea and glaucoma were then considered and interesting illustrative cases were cited. Finally, a case of bilateral retinal detachment was described in which no hole could be found, but complete cure resulted from puncture of the sclera followed by thorough cauterization of the margins of the wound. Mr. WALKER congratulated the lecturer on his address and presented him with the Doyne memorial medal.

Dr. HAROLD GJESSING then read a paper on Holth's iridencleisis. The operation was fully described, and the results obtained in a series of 122 eyes were given. These had been under observation for periods varying from 6 to 129 months and showed 81 per cent. of cures. One interesting feature of the operation is that its full effect on the intra-ocular pressure may not be manifest for one or two months. Dr. EMIL DE GROSZ was inclined to favour cyclodialysis for cases of chronic glaucoma, and claimed 78 per cent. of successes. This figure at the end of the first year, however, is only 62 per cent., and at the end of the second 54 per cent. This operation can easily be repeated and the figures quoted referred, presumably, to cases where only one operation had been done. Mr. HARRISON BUTLER had practised iridencleisis by a slightly different technique for several years and out of 36 cases had had only two in which the intra-ocular pressure was not lowered. He had also performed the operation in ten cases of acute glaucoma in all of which it had been successful. Dr. CRISP had used the operation for the last two and a half years, and was satisfied with it. His technique was slightly different, as he dissected up a conjunctival flap. Col. WRIGHT was more inclined to trephine.

In the afternoon a telegram of good wishes was read from Prof. LUNDSGAARD, and Mr. JAMES CRAIG then opened the discussion on penetrating wounds of the eye. He gave a comprehensive survey of the subject and divided the types of injury into five groups, namely, direct, indirect, and those due to bacterial infection, chemical action and cyst formation. The use of a conjunctival flap was urged, on account of the permeability of corneal scars to pneumococci and staphylococci. The flap could be made to retain its position if the affected area of cornea were first carbolized or touched with trichloracetic acid. Advice was given as to the removal of foreign bodies from different parts of the eye and sympathetic ophthalmitis came in for consideration. Prof. Dr. SCHÜLLER described four different methods of localization and gave details of the so-called physiological one, which gave excellent results

in Vienna. In this, five exposures were made with the patient's eye in different positions, the X-ray tube not being moved. Mr. PERCIVAL HAY enumerated various accidents which had caused perforating wounds of the eyeball. Out of a total of 131 cases, in 82 with corneal wounds the eye was lost in 25, in 28 with corneoscleral wounds 17 eyes were lost and in 21 with scleral wounds only seven were lost. Mr. HARRISON BUTLER, described Vogt's " bone free method " of radiography and the slit-lamp changes to be looked for in cases of suspected sympathetic ophthalmitis. He had found prophylactic injections of N.A.B. to be of great service and had had no useful information from a differential blood count. Mr. CHAVASSE had had the same experience. Dr. GJESSING described another method of X-ray localization in which small buttons of lead were attached to the limbus and Dr. GIRI gave the result of parenteral milk injections in traumatic infections of the globe. In his hands, this method had proved remarkably successful. Mr. ZORAB emphasized the importance of considering the condition of the uninjured eye and dwelt on the seriousness of injury to the lens from the prognostic standpoint. Dr. GREENE suggested the use of antitetanic serum in injuries resulting from agricultural implements and Mr. ADAMS reported an interesting case of removal of a piece of copper from the vitreous by the scleral route.

Mr. RUGG GUNN then read a paper on contact glasses. These are particularly useful to airmen and drivers of fast cars since their use does not interfere with monocular appreciation of perspective, they give a larger field of vision than ordinary glasses and they enable perfect fusion to take place in ametropia. Various points in the fitting of contact lenses were then explained. Dr. MARION GILCHRIST asked whether they were of service in conical cornea, and Mr. RUGG GUNN related a case of this disease in which vision had been improved from 2/60 to 6/9 by their use. Dr. GIRI alluded to the importance of allowing the patient to test his toleration by trial lenses before having a pair of his own.

Saturday morning saw the welcome return of the Master, Mr. CRIDLAND, who was accorded an ovation on taking the Chair.

Dr. BERNARD SAMUELS read an interesting paper on the methods of formation of posterior abscess in ulcus serpens. His observations were based on the histological examination of 50 eyes enucleated for this condition, 42 of them being glaucomatous at the time of removal. The ulcers never extended to the peripheral or the deep layers of the cornea, though in many cases, necrosis of the lamellae might occur. The infiltrated border never extended round the whole circumference of the ulcer. The posterior abscess might be flat or protuberant. In some cases it lay between

Descemet's membrane and the posterior lamellae of the cornea, in others it appeared to split the membrane. Leucocytes probably arrive by two routes (i) by penetrating Descemet's membrane which can occur only where the endothelium has been shed (ii) by extension from the periphery along the interlamellar spaces. The paper was discussed by the MASTER and Messrs. HARRISON BUTLER, YOUNG, CRISP, COULTER, Miss MARION GILCHRIST and Prof. CURRAN.

Dr. CRISP read a paper on the cross cylinder tests especially for astigmatic axes and gave an interesting photographic demonstration of the effects of astigmatism. To determine the axis, as opposed to the amount of astigmatism present, the cross cylinder is held at 45° off axis and quickly rotated from one side to the other. The method is susceptible of great accuracy and gives good results in practice. The paper led to a lively discussion.

Mr. YOUNG opened his paper on recession of the internal rectus muscle with a plea for a symposium on strabismus at next year's congress. He estimates the amount of recession necessary, by a simple formula, but emphasized that operation was only the first step in the cure of squint, its full result not being manifest until several months later. The paper was followed by a discussion in which allusion was made to various methods of operating. Mr. NICHOL HUGHES showed fundus drawings of macular disease in children. This condition was commoner in girls and in a fair proportion of cases the only aetiological factor which could be discovered was a previous attack of measles. In the discussion it was suggested that some of the cases might have been tuberculous though no tangible evidence of this disease had been obtained.

Prof. CURRAN then read the final paper of the Congress on peripheral iridotomy in acute and chronic glaucoma. The technique of the operation was described, also its applicability to different types of cases. Some of these were described in detail.

During the Congress, the members had ample opportunities for visiting a well-stocked scientific and commercial museum. In the former Mr. BURDON COOPER had a demonstration showing fluorescence of removed cataractous lenses under ultra-violet light, Mr. GEORGE YOUNG showed some slides illustrating haemorrhage into Cloquet's canal without rupture of the hyaloid membrane. Miss MARGARET DOBSON and Mr. T. H. WHITTINGTON showed devices for training squinting children, Mr. ARTHUR GREENE a specimen of idiopathic panophthalmitis and Mr. RUSS WOOD, slides of epithelioma of the limbus and papilloma of the caruncle.

The Congress as a whole was a great success and reflected much credit on those responsible for its organization.

F. A. W -N.

ABSTRACTS

MISCELLANEOUS

(1) **Meller, Professor J. (Vienna).—Diseases of the lacrymal apparatus.** *Trans. Ophthal. Soc. U.K.*, Vol. XLIX, p. 233, 1929.

(1) **Meller**, in the opening paper at the Oxford Ophthalmological Congress, 1929, discussed the methods of treating diseases of the lacrymal apparatus, and in particular, chronic dacryocystitis. He described the treatment of introducing into the lacrymal sac such medicaments as silver nitrate 0·25 per cent., albargin 0·25-0·75 per cent., optochin 1 per cent., and oxycyanate salve. Silver nitrate is contra-indicated when ulceration, obstruction of the lacrymal duct, and inadequate drainage are present. Optochin salve is of value in pneumococcal infections of the lacrymal sac. When iodine injections are used the sac is first cleansed by saline irrigations. Potassium iodide 10 per cent. is introduced into the sac and followed by a very small quantity of hydrogen peroxide. Swabs are placed over the puncta to prevent regurgitation, and finally the sac is syringed through with distilled water. Meller states that these methods afford no certain cure.

Hetero- and autogenous vaccines injected into and around the sac are unsatisfactory. He describes the destruction of the mucous membrane of the sac by zinc chloride, chromic acid, ammonium trichloride and other chemicals as being primitive.

Meller gives an account of three methods of surgical treatment of chronic dacryocystitis. He recommends extirpation of the lacrymal sac when pus is present; when an intra-ocular operation is to take place; and when the lacrymal sac is tuberculous.

He gives a detailed account of dacryo-cysto-rhinostomy and its modifications as practised by Toti, Dupuy Dutemps, and Marquez. The maxilla in the vicinity of the lacrymal crest is thick and in the process of chiselling, an opening is accidentally made into the anterior ethmoidal air cells on some occasions. Concussion has followed upon violent chiselling. Later complications are suppuration in the canaliculi; granulation tissue and cicatrization blocking the site of anastomosis between the nasal mucosa and lacrymal sac; erysipelas in and around the wound; surgical emphysema; granulations and cicatrization.

The treatment of acute purulent dacryocystitis must be governed by the condition of the tissues in the vicinity of the lacrymal sac. When there is no clinical evidence of softening or infection of the

tissues around the sac then conservative measures are indicated. Hot, damp, antiseptic compresses are applied over the sac; a tampon soaked in 5 per cent. solution of cocaine and adrenalin is inserted into the nose on the affected side; the canaliculi are dilated and aspiration of the pus is attempted.

When the surrounding tissues are infected Meller advises incision and drainage followed later by radical dacryocystectomy and excision of a fistula if such is present.

The indications and technique for other methods of treatment such as slitting the canaliculi, probing, pressure syringing, forced dilatation, and stricturotomy are also discussed in this paper.

Meller describes the value of radiographic examination after injection of lipiodol 40 per cent. He emphasizes the importance of a thorough investigation of the nose for lesions that may cause epiphora by reflex irritation.

By instilling Rose-bengale solution at the palpebral margin the puncta lacrymalia and the posterior margin of the lid are stained selectively. Normally, the puncta lie within the stained line.

H. B. STALLARD.

(2) **Zentmayer, William (Philadelphia).—Primary sarcoma of the iris. Removed by iridectomy. No recurrence in three and a half years.** *Trans. Amer. Ophthal. Soc.*, Vol. XXVIII, p. 109, 1930.

(2) **Zentmayer's** case of primary sarcoma of the iris was a boy, aged 10 years, who for four months had noticed a " small pinkish coloured swelling on the coloured part of the left eye." This swelling had gradually increased in size.

Clinical examination of the left eye revealed a swelling 3 by 5 mm. situated in the lower temporal quadrant and on the pupillary margin of the iris. Some fine blood vessels ramified on the anterior surface of the growth. The neoplasm was translucent on slit-lamp examination. The iris reacted to light except in the sector where the growth was situated.

The neoplasm was removed by wide iridectomy, and during the operation bleeding was free. Hyphaema and detritus were present in the anterior chamber after operation, and owing to the doubtful nature of this débris the posterior aspect of the cornea and the lips of the wound were curetted.

Later, five X-ray treatments were given, in all, 175 per cent. of an erythema dose. Details of this treatment are given in the original paper. Pathological investigation revealed a spindle celled sarcoma with no definite intercellular substance, and having blood vessels lined by endothelium only. Three and a half years later, the patient was examined and found to be in good health.

The vision in the affected eye was 6/20 with correction. There was a triangular opacity in the deeper layers of the cornea and an irregular shaped opacity in the lens capsule at the site of the neoplasm. Diffuse granular opacities were present throughout the posterior cortex of the lens.

H. B. STALLARD.

(3) **Knapp, Arnold (New York).—Report of small tumour of the iris which caused secondary glaucoma. Microscopic examination:—Remarks on the relation of melanoma to sarcoma of the iris.** *Trans. Amer. Ophthal. Soc.*, Vol. XXVIII, p. 118.

(3) **Knapp** describes a case of sarcoma of the iris occurring in a male, aged 30 years, who six weeks before examination had noticed that his right vision was defective. For nine years the patient had noticed a " brown spot " on the iris between 3 and 5 o'clock.

On clinical examination a brown mass was seen on the iris at the site described by the patient. The surface was flat and it was thickened at the periphery. The anterior chamber was deep; the pupil 8 mm. in diameter and immobile; the intra-ocular pressure was 42 mm. of mercury; the visual field concentrically contracted and the optic disc cupped. The left eye was normal.

A trephine operation was performed. One year later the intra-ocular pressure was normal but the brown mass on the iris had increased in size. A diagnosis of malignant neoplasm was made and the eye removed. At the end of this paper there is a discussion on the relationship between melanoma and sarcoma of the iris.

H. B. STALLARD.

(4) **Sédillot, Jaques—Anatomical and clinical evidence of the hypophyseal causation of ophthalmic migraine and ophthalmoplegic migraine. (Preuves anatomiques et cliniques du mécanisme hypophysaire de la Migraine ophtalmique et de la Migraine ophtalmoplégique).** *Arch. d'Ophtal.*, April, 1930.

(4) In ten years and out of 213 cases of migraine under treatment, **Sédillot** has collected six undoubted examples of ophthalmic migraine. According to Charcot and Féré, who first pointed out the clinical entity of this syndrome, ophthalmic migraine is nothing more than common migraine characterized by the severity of symptoms and especially by peculiar ocular phenomena at the onset of the attack. Sédillot adds: it is characterized by its abrupt onset occurring at any hour, whereas ordinary migraine develops gradually and often during sleeping hours, manifesting itself on

exposure to light, whether natural or artificial. Proof that ophthalmic migraine is not a special type is found in the fact that from time to time the subjects of common migraine have an attack of clearly marked ophthalmic migraine.

What is the cause (*mechanism* is the term Sédillot employs) of the special ocular symptoms of ophthalmic migraine? The author discusses briefly various explanations brought forward at congresses of neurology and ophthalmology, and concludes that none of them is wholly acceptable.

It seems obvious, he writes, that either the scintillating scotoma is a phenomenon of hyperaemia, and hemianopia one of ischaemia, or that the scotoma is a phenomenon induced by irritation of a conductor nerve and hemianopia a phenomenon of inhibition of the same nerve. Whether their origin lie in a vascular disturbance or in an interference with nerve conduction, these are in all cases two inverse phenomena. He is of opinion that the two successive ocular phenomena of the onset of ophthalmic migraine, the scintillating scotoma (indicative of nerve irritation) and homonymous hemianopia (indicative of nerve inhibition) are both due to a sudden compression of the optic tract by the hypophysis in a pathological erectile condition (*poussée erectile.*)*

The hypophysis in enlargement of any kind can extend only laterally and upwards. Lateral enlargement must lead to pressure on the optic tract. In rapid swelling there are two stages of pressure, one of irritative compression, during which abnormal luminous sensations are experienced; in the other and later stage the pressure inhibits or suppresses conductivity in the nerve and homonymous hemianopia results, with the special feature of a transitory negative scotoma.

In support of his contention that the scintillating scotoma is due to irritative compression of the tract, Sédillot quotes the case of Plateau, a medical man, who suffered all his life from ophthalmic migraine: he became blind from choroido-retinitis, but continued to be troubled by the sensations of a scintillating scotoma. Sédillot expresses the opinion that compression of the optic tract by a suddenly or rapidly congested hypophysis will suffice to explain the following features of ophthalmic migraine, logically and simply:—the bilateral and hemianopic character of visual disturbance; the persistence of a scotoma scintillans in the case of Dr. Plateau; the appearance of normality, or at most of a slight arterial spasm in the fundus oculi, during the hemianopia; and even such symptoms as anosmia, agraphia, etc.

* In the *Monde Médical*, December, 1929, Sédillot offers some explanation of the pathogenesis of these congestive states of the hypophysis and the reasons for thinking that they are generally limited to one half of the gland.

Ophthalmoplegic Migraine.—Sédillot suggests that the same compression theory may be applied to ophthalmoplegic migraine, the position of the third nerve in the wall of the cavernous sinus, which is the lateral boundary of the *sella turcica*, rendering it liable to pressure. His views in this relation, however, are less crystallized.

His belief is that the anatomical substratum of all forms of migraine is a congested condition of the hypophysis, and that this erectile expansion of the hypophysis may exert fairly distant repercussions on pre-existing weak points in the brain.

The author's hypothesis of a pituitary origin of migraine resembles closely that suggested by J. H. Fisher, in 1918. (*vide Proc. Roy. Soc. of Medicine, Section of Ophthal.*, Vol. XII.)

J. B. LAWFORD.

(5) **Odell, A. G. (Clifton Springs, U.S.A.).—Migraine: a further study.** ***The Clifton Medical Bulletin,*** Vol. XVI, p. 17, 1930.

Occupation and migraine. ***The Clifton Medical Bulletin,*** Vol. XVII, p. 33, 1931.

(5) In the first article Odell gives a valuable survey, together with references, of recent work on migraine and analyses the 91 utilizable replies received in answer to a questionnaire sent out to 177 patients with migraine whom he had treated, and in all of whom examination for physical causes was disappointing. The commonest physical condition was constipation (in 44 out of 177 cases); 13 only " had refractive errors of sufficient importance to be mentioned "; focal sepsis was likewise of no great significance. Of the 91 replies 76 were by women and 15 by men. From these replies it appears that in about half of the women who had passed the menopause, migraine had become less troublesome. As regards heredity, children of a migrainous mother have a much smaller chance of escaping migraine than those of a migrainous father, and daughters are more apt than sons to inherit the condition. In the vast majority of cases treatment is disappointing; this applies to luminal as well as to the older drugs and attempts at eliminating peripheral irritation. Dietary treatment has been of benefit in only a few carefully selected cases, the best results coming from carbohydrate restrictions. Lyon's method of washing out the duodenum, on the supposition that migraine has a biliary basis, gives unconvincing results. " Rest, freedom from strain . . . an abundance of sleep, moderation and not prohibition in all things seem at present the best line of attack on this problem."

In the later contribution the author analyzes the case histories of 376 patients with migraine seen at his clinic during the past 21

years. In this series there were 82 men and 294 women; the percentage of those following a profession was higher in the case of the men, who as a group also showed a higher incidence of professionally employed, when compared to a group of patients treated for other conditions. Yet when all migrainous patients are studied as one group, a greater incidence of the affection amongst professional people is not found: in fact the reverse is the case. "This study would seem to indicate that one does not have to be a 'brain worker' to be a fit subject for migraine." The seemingly greater frequency of migraine among professional men is due to the fact that the nature of their work compels them to seek relief from this condition.

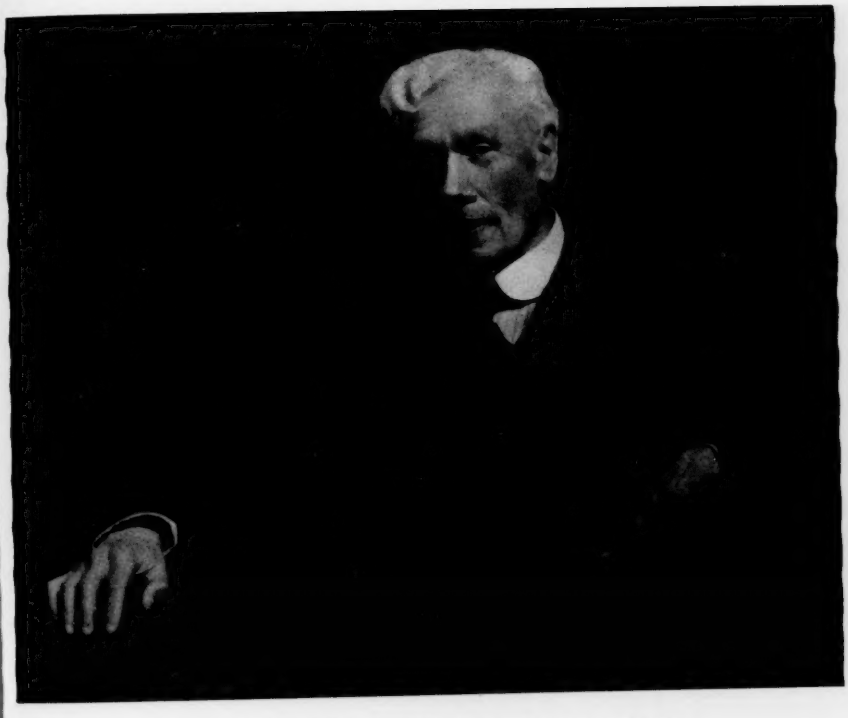
ARNOLD SORSBY.

OBITUARY

Mr. F. RICHARDSON CROSS, M.B., F.R.C.S., LL.D.

IT is a trite saying "that manners make the man," but it was well exemplified in the late Mr. Richardson Cross who died after an exceedingly full and busy life on July 12 last, in his 84th year, following an attack of influenza. Possessed of striking and handsome features, a tall well-knit athletic figure, his open and charming manners secured for him a host of friends and admirers in various walks of life: in his consulting room, in the hospitals with which he was connected, at the University, at scientific societies, in the Civic chamber, on the Bench, and in the hunting field.

The son of the Rev. Joseph Cross, he was born at Meriott Vicarage, Somerset, and educated at Crewkerne Grammar School and King's College Hospital, London, where he served as House Surgeon and came under the influence of Sir William Fergusson. Qualifying as M.R.C.S. in 1871, he held at King's College the posts of Medical Tutor, Sub-Dean, and Assistant Demonstrator of Anatomy. He served also as a Clinical Assistant at the Royal London Ophthalmic Hospital in the days of Bowman and Critchett. He became F.R.C.S. in 1878 and shortly after M.B. of the London University. In 1878 he left London in order to take a teaching post in anatomy at the Bristol Medical School, and continued to reside at Bristol for the remainder of his life. He joined the staff of the Bristol Royal Infirmary first as a General Surgeon, and practised as such in association with ophthalmology for six years. He was one of the first to introduce Listerian



F. RICHARDSON CROSS, M.B., F.R.C.S., LL.D.

methods into the West of England, Lister having joined the surgical staff at King's College Hospital on the death of Sir William Fergusson before Cross left London.

Like Critchett, and Bowman before him, Cross gradually found the demands of ophthalmic practice become so absorbing that he was obliged to restrict himself entirely to it. His first appointment as an Ophthalmic Surgeon was to the Eye Dispensary at Bristol. On giving up general surgery he became Ophthalmic Surgeon to the Royal Infirmary. In 1882 he joined the staff of the Bristol Eye Hospital, continued in active service there for a period of 44 years, and by his administrative ability raised it into a highly esteemed, up-to-date and efficient institution.

He became a Member of the Ophthalmological Society of the United Kingdom shortly after its formation in 1881, was a frequent attendant at its meetings and made many contributions to its proceedings. He was elected its President in 1914.

In 1885, Mules, of Manchester, introduced his operation of evisceration of the globe with the insertion of an artificial vitreous, and Cross, who had been brought up in the school of " conservative surgery," at once commenced to perform it. Of a series of cases he described at the Society in 1887 there were two which had been followed by a mild form of sympathetic ophthalmitis. Later, he with naïve humour described a case, though it told somewhat against himself, in which he had inserted a silver globe and where argyrosis subsequently took place, causing so much discoloration that the condition was for a time mistaken for one of a recurrent melanotic growth in the orbit.

In 1890, Cross described the remarkable case of a young woman who shed blood-stained tears, and caused much amusement to members of the Society by handing round a handkerchief she had used with blood-stained spots on it, as a proof of the genuineness of his observation.

He contributed two papers on " Hydrophthalmos "; in the first, dealing mainly with the literature of the subject and attempting to differentiate between the terms, " hydrophthalmos," " buphthalmos," and " megalophthalmos "; in the second, he described two congenital cases where he had examined the eyes pathologically, and which he said strongly supported the view that the essential cause of the affection lies in the imperfect condition of the filtration area.

In 1892, he recorded a case in which he had performed extraction of cataract, and which after six months of good vision had developed glaucoma so that the eye had to be removed. Its pathological examination showed that the surface corneal epithelium had extended through the wound and spread round the whole of the anterior chamber.

In his Presidential Address in 1914 he gave a review of the Society's activities since its foundation, and among many sage remarks compared a specialist who had not had a fair knowledge of general medicine to " a bird with but one wing."

Being a fluent and attractive speaker Cross's services as such were frequently sought as a lecturer; on behalf of charitable institutions, and as a proposer of toasts at public dinners. His lectures may be best described as scenic representations drawn in bold outlines on a large canvas, rather than miniatures full of intensive detail such as specialists are often prone to produce. Thus his Oration at the Medical Society of London in 1901 dealt with " Some Landmarks in the Progress of Medical Science." His Bradshaw Lecture at the Royal College of Surgeons in 1909 was entitled " The Brain Structures concerned in Vision." His Long Fox Lecture at Bristol University in 1915 was on " The Evolution of the Sense of Sight." For the Doyne Memorial Lecture at Oxford, in 1920, he chose for his subject " The Nerve Paths and Centres concerned with Sight."

In 1898, he presented himself as a candidate for election to the Council of the Royal College of Surgeons, and it demonstrates well his popularity throughout the country that he was returned at the head of the poll, having received 411 votes with 74 plumpers. He continued to serve on the Council until 1914, the attendance at its meetings necessitating frequent journeys to London. Having attained remarkable reputation and success in practice in the West of England, like some other successful Extra-Metropolitan practitioners he had hankerings at times for practice in London. He did indeed for a while hold consultations in London in the rooms of a former assistant, though he never actually had his plate on the door. When reviewing his life towards its close, he admitted, however, that had he returned to London he could never have enjoyed the amenities of country life which he was able to participate in from his home in Bristol, and which he appreciated so fully.

Cross was a great lover of animals and a keen follower of the chase, hunting with the Berkeley and the Duke of Beaufort's hounds, in connection with the latter becoming entitled to don the buff and blue. He owned a farm at Alverston in Gloucestershire where he found recreation in various forms of stock breeding, and possessed a pedigree herd of shorthorns.

In 1897, he was elected a Sheriff of the City of Bristol and a J.P.: to commemorate the birth of his third daughter during his year of office he was presented with a silver cradle.

In appreciation of his long services to the University of Bristol, first as a Dean of the Faculty, and later, as Lecturer and then Reader in Ophthalmology, he had conferred upon him the

honorary degree of LL.D.; and in 1920 his portrait, subscribed for by his friends and admirers, was presented to the University.

Of the numerous other posts that he held and good works that he did during his long life a list only can be made here: Surgeon to the police force; Assistant Surgeon to the old Bristol Rifle Volunteers; Member of the Council of Clifton College; Vice-President of the Royal School for the Blind, Bristol; Chairman of the Bristol Centre of St. John's Ambulance; Governor of Queen Victoria's Jubilee Convalescent Home, Clifton; and President of the Grateful Society.

No man lives and dies to himself; no one lives an isolated existence. We take from those who have preceded us, mostly from those with whom we are closely associated in our plastic early years, and we give to those who succeed us, mostly those who associate themselves with us in our prime. From Sir William Fergusson whom Sir James Paget described as "The greatest master of the art and the greatest practical surgeon of our time," Richardson Cross acquired not only his surgical ardour and manipulative dexterity, but also his social instincts and personal sympathies which won for him favour from all classes of mankind.

On joining the staff of the Bristol Royal Infirmary, Cross had as a colleague Dr. Edward Long Fox. In 1915, when Cross delivered the Long Fox Memorial Lecture he gave a description of his deceased friend's characteristics which correspond so closely to his own that it may be quoted here as a description of himself. Cross said:—"He was a student of science and a sound practitioner of medicine, ever extremely attentive to his cases, whether in hospital or in private, and he was a personal friend as well as adviser to his patients . . . . He was for several years the acknowledged head of the medical profession in Bristol, and possessed the full confidence of all his colleagues. Generous in his hospitality, and in his charitable support of hospitals and other deserving objects, his influence and effort were always available for any good work, and he helped in secret many poor and struggling individuals. He was always kind and helpful to young men starting in their profession . . . . at his death a very large circle lost a beloved personal friend, the profession of medicine one of its most trusted leaders, and the City of Bristol an honoured and valuable fellow-citizen."

At the Bristol Eye Hospital Cross had working with him a succession of house surgeons and assistants over whom he exerted a stimulating and inspiring influence, and on whom the impress of his personality became ingrained. Three of them predeceased him; Snellen Junior, who succeeded his distinguished father as Professor of Ophthalmology at Utrecht University; W. Ilbert Hancock, who became an Assistant Surgeon at Moorfields

Hospital; and Alexander Ogilvie, who joined Cross on the staff at the Bristol Eye Hospital. Among his other house surgeons were Sir Richard Cruise, Bernard Cridland, of Wolverhampton, Thomson Henderson, of Nottingham, and E. R. Chambers, of Bristol.

Cross married in 1889 the daughter of Captain Hawkes, R.N., who died at the end of 1920. He had three daughters who survive him.

E. T. C.

NOTES

French Course in Ophthalmic Surgery

PROFESSOR TERRIEN announces the annual French *cours de perfectionnement* to be held at the Hôtel Dieu in the month of October. The course begins on October 3, and will be composed of twelve lectures. He is assisted by Professor Regaud, M. Velter, and MM. Casteran, Veil, Renard, J. Blum, Dollfus and Mlle. Braun. A certificate will be given on completion of the course, and the fee has been fixed at 300 francs. Further information can be obtained from Professor Terrien.

* * * *

Heredity

WE are asked by Dr. K. T. A. Halbertsma, of Delft, to call attention to the fact that the VIth International Congress of Genetics will be held in Ithaça (U.S.A.) from August 24 to 31, 1932. The German Society for the Study of Heredity meets from September 13 to 17, 1931, in Munich; and the XVth International Congress of Anthropology and Prehistoric Archaeology meets in Paris also in September, 1931. Dr. Halbertsma would like to meet those interested in the study of heredity and disease at either of these meetings.

FUTURE ARRANGEMENTS

1931

October 6.—Midland Ophthalmological Society, at Birmingham.
December 1.—Midland Ophthalmological Society, at Birmingham.

CONTEMPORARY OPHTHALMIC LITERATURE

American Journal of Ophthalmology. *July, 1931.*

PARKER. Uveitis associated with alopecia, poliosis, vitiligo and deafness.
O'BRIEN and SALIT. The chemical constituents of the aqueous, vitreous and lens.
JOHN. The sedimentation velocity of blood cells in eye diseases caused by vitamin A deficiency.
BROWN. An auxiliary suture in muscle tucking.
MOORE. An occurrence of eye lesions in tuberculous patients.
LLOYD. Herpes and allied conditions.
HYDE. Arsenical exfoliative keratitis.
ZENTMAYER. Sclerocorneal trephining in chronic simple glaucoma.
EVANS. The construction of a campimeter.
HORNER and CORDES. Metastatic abscess of iris and ciliary body.
CASTROVIEJO. Lid epithelioma. Excision.
MILES and BEAUMONT. Monocular testing of the colour-blind.
JACOBS. The present trend of thought regarding vernal conjunctivitis.
DERBY. Social service at the Massachusett's Eye and Ear Infirmary.
GOLDENBURG. Control of the tenotomized muscle.
SHASTID. A case of ocular epilepsy.
DAILY. Hemangioma of the ciliary body.
VON DER HEYDT. The reflex-free fundus camera.
ABRAHAM. Bell's phenomenon and the fallacy of the occlusion test.
PRANGEN. What constitutes satisfactory cycloplegia?

Archives of Ophthalmology. *June, 1931.*

COWAN. Glasses: How should the ophthalmologist write his prescription?
KIRBY. Calcium in relation to cataract. (1) In vitro. (2) In vivo.
ROSENBAUM. Congenital anophthalmos with orbitopalpebral cyst.
BRUCE. Retinoblastoma. Its recognition when the fundus oculi is obscured.
LOURIE. Focal infection. An etiologic factor in diseases of the eye.
SALIT and O'BRIEN. The behaviour of the vitreous under different hydrogen and hydroxyl ion concentrations. A study in vitro.
GIFFORD. Test types for estimating with Worth's amblyoscope the vision of malingerers.
GRINKER. Gliomas of the retina, including the results of studies with silver impregnations.
COCHRAN and ROBINSON. Multiple epidermoid carcinoma of eye and lid.
BEARD. The postcycloplegic test.

Société Belge d'Ophtalmologie. *April, 1931.*

BADOT. Persistent pain in herpes ophthalmicus.
WIBO. Syndrome of the nasal nerve.
VAN LINT. Papilloedema in an eye with coloboma of the iris and choroid.
——— Actinomycosis of the orbit.
MARBAIX. A case of meningioma diagnosed by X-Ray.
——— Reflections on a case of chronic glaucoma. Treatment by Kalt's method and Weekers' retrobulbar injections of dionine.
KLEEFELD. New applications of retrobulbar injection.
COPPEZ. On psuedo-Graefe's sign (Fuchs' sign).
RUBBRECHT. A new direction in the treatment of retinal detachment.
HUBIN and HUBERT. Trachoma in Belgium and foreign labour.
RUBBRECHT and DE JAEGER. Action of irritating substances on the choroid and the retina.

DE METS. The career of Henri and Guillaume de Grandjean, oculists to the Kings Louis XV and Louis XVI.
WEEKERS. University teaching of oculists.
COPPEZ and MEYERS. Radiography of the lacrimal passages before and after dacryo-cysto-rhinostomy (Dupuy-Dutemps).
CLAES. The operation of Szymanski or demi-Elliot.

Annales d'Oculistique. *May, 1931.*

ZEEMAN. Black spots at the side of a sarcoma of the choroid.
VALIÈRE-VIALEIX. The frequency of interstitial keratitis in ophthalmic herpes. A new case of unilateral Argyll Robertson signs following ophthalmic herpes.
MASSELIN. W. R. Hess' method. Graphic representation of the examination of oculomotor affections. Its advantages.
COLOMBO. The treatment of spring catarrh. Light as the determining cause of the disease.
BOURGUET. Should pituitary tumours and cysts of the pouch of Rathke be considered as suprasellar or intrasellar tumours?

June, 1931.

DEVÉ. The best size and shape of correcting lenses taking into account reflections and secondary images.
AURAND. Partial rupture of the optic nerve from contusion of the globe.
NORDMANN. Considerations on myotonic cataract and endocrine cataract.
RIFAT. A new case of bilateral microphthalmia of syphilitic origin complicated by other ocular malformations.
DOMINGUEZ. The intra-ocular tension after pressure on the eye.

Archives d'Ophtalmologie. *July, 1931.*

TEULIERES and BEAUVIEUX. The zonule in the vertebrates.
DOR. A new international optometric scale.
GONIN. Recurrences and relapses of retinal detachment.
MONTHUS, FAVORY and LEVADITI. On a case of "sodoku" of the lids.
PASCALIN. Treatment of hypopyon ulcer by cautery paracentesis.
WEINGOTT. New plastic operation for cicatricial ectropion.
BERG. Scleritis following mumps.
MARIN-AMAT. Plexiform neuroma of the orbit, of the upper lid and of the temporal region, of congenital origin

Revue Internationale du Trachome. *July, 1931.*

SZYMANSKI. Classification of trachoma
RAYNAUD and TOULANT. The incorporation of the trachomatous.
VIOLLE. Foreign workers at Marseilles and trachoma.
HUBIN and HUBERT. Trachoma in Belgium and foreign labour.
MORAX. Bacteriological researches in trachoma in Algeria.
MORAX and JEANDELIZE. The difficulties of diagnosis of papillary trachoma.
MORAX and NIDA. The comparative study of certain strains of Bacterium granulosis.
ADAMANTIADIS. The operations of choice for trichiasis.
TRICOIRE. The intradermal reaction of trachoma
TALBOT. The academic index of groups in the cases of Gafsa and Tozeur.
SÉDAN. Researches on the intradermal reaction of trachoma.
PUSCARIU. Incipient trachoma.
——— The frequency of trachomatous pannus before the age of twenty and its connection with the age of the disease.
SÉDAN. Interstitial keratitis and trachoma.
DELANOË. Attempted application of anti-trachomatous prophylaxis in the Bled.

Archiv für Ophthalmologie. *July, 1931.*

KRONFELD and DEVNEY. Observations on our knowledge of the refraction curve.
KÖGEL. The appearance of cataract and the photochemical action of the sulphohydro-system.
FISCHER. The differentiation of the mesodermal layer of the optic cup, the development of the cornea, the anterior chamber and the pupillary membrane in man.
HAAS. On Imbert's chromoptometry as a method of determination of refraction.
BAURMANN. Spectroscopic investigation of the fundus.
OHM. On nystagmus.
WALICHAN. On the pathological anatomy of endophthalmitis. On the changes in the supra-choroidea and the supra-choroideal space.
JOHN. On the action of subconjunctival injections of hypertonic saline in glaucoma.
VANCEA. The meaning of retinal tension in general disease.
CAR. Muscle clamping and its action on the intra-ocular tension.
SONDERMANN. Critical observations on the results of investigation into the blood pressure in the veins and capillaries of the uveal tract.
TOWBIN. On the index of blood katalysis in trachoma.
——— A case of epibulbar leucosarcoma.
LINKE. Ophthalmomyasis.
GOLDMANN. Answer to Schläpfer's criticism of my work "Critical and experimental investigation of so-called ultra-red cataract."

Klinische Monatsblätter für Augenheilkunde. *June, 1931.*

FUCHS. On the influence of new growths on neighbouring blood vessels and its clinical meaning.
VOGT. Histological findings in detachment of the zonular lamella (Solutio laminae capsulae ant.) of smiths' and glassblowers' cataracts.
VELHAGEN. Quinine discoloration of the region of the palpebral aperture as an industrial disease in the manufacture of hydroquinine.
LÖRTSCHER. A comparative investigation of the tonometers of von Fick-Livschitz and Schiötz.
BARTELS. High myopia in the first years of life.
OHM. Homolateral retinoscopy of both eyes and divergence nystagmus.
v. CSAPODY. Relaxation of the central part of the lid margin. Blepharophimosis medialis.
WOLFF. Traumatic diabetes insipidus following a lesion in the region of the pituitary.
WEINSTEIN. Investigations on the aetiology and treatment of spring catarrh.
FAZAKAS. The reposition of the conjunctival fold as an operation for pterygium.
JAEGER. Influenza and optic neuritis.
POPOVIE. On the diagnosis of choroidal sarcoma (modification of Meisner's puncture with the object of microscopic confirmation).
HANSSEN. On the technique of gelatine embedding and Sudan stain.
FALTA. Clinical points of view in trachoma.

July, 1931.

WERDENBERG. Factors in cure and results in ocular tuberculosis.
v. SZILY. Metastatic tuberculosis.
v. PLANTA. Bilateral ulcus serpens with infection of the lens and post-operative panophthalmitis as an expression of constitutional inferiority.
THAMM. On marginal furrowing and marginal ectasia of the cornea.
WIBAUT and WOLFF. On the treatment of traumatic cataract.
GNAD. On microphakia.
HESSE. On the question of Vossius' ring.
KAMINSKI. On the transplantation of mucous membrane from the lip in trachoma (Denig).
v. KÖTELES. Success with "Euphakin."
FAZAKAS. Observations on the anatomy and mechanism of the lacrimal sac.

HAUER. Critical observations on the aetiology of lacrimal hypofunction.
APIN. Observations on the method of determination of refraction by the chromoptometer.
FALTA. New facts concerning my approximation test for the determination of unilaterial blindness or weak sight or their simulation.
LECH, JUN. A rare photograph of cysticercus in the vitreous.
AULAMO. Summary of my paper "Experimental researches into the effect of X-rays on the rabbit's eye."

Archivio di Ottalmologia. *April, 1931.*

MARGOTTA. Clinical research on a case of typical coloboma of the iris, choroid and the optic nerve.
NICOLATO. Posterior sclerectomy in the cure of secondary glaucoma with total posterior synechiae.
VITO. Clinical consideration of a case of bilateral typical retinitis circinata.
SALA. Action of armina on the eye.
SALVATI. Eight years of surgery of the lens in Egypt.
——— A case of tuberculosis of the conjunctiva treated by light.

Bollettino d'Oculistica. *June, 1931.*

RONCHI. Optical reasons for the convergence reaction of the pupil.
GUALDI. On the optical theory of contact glasses and a new series of visual acuity in the correction of ametropia.
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